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TREATMENT OF ACTIVE TUBERCULOUS PERICARDITIS BY PERICARDIECTOMY

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and
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Tuberculous pericarditis, chronic and insidiously progressive, frequently characterized in its early stages by an inflammatory effusion and culminating almost inevitably in great thickening and fibrous contraction of the diseased pericardium, presents real difficulties in its management.[1] From very inception, it poses the twofold problem of controlling infection and correcting the mechanical interference with the flow of blood imposed by constriction of the heart or of its great vessels, most particularly the vena cava, the compression of which is believed to be the primary reason for the persistent and recurring pleural and peritoneal effusion.

The gravity of the disease is illustrated by the study of Harvey and Whitehill[2] "Of 20 proven cases with effusion 16 died and of 17 proven cases without an effusion 15 died, a mortality of 83 per cent." Blalock and Levy,[3] in a study of 22 proved cases in 1937, reported that

> Every patient, with one exception, with a proved diagnosis of tuberculous pericarditis who has not had a pericardiectomy, is dead. . . . Of the six patients operated upon for removal of constricting pericardium, three were cured or markedly improved, and three are dead. Of the latter, one died 6 months after operation of miliary tuberculosis, the second died 2 months following operation, also of miliary tuberculosis, and the third died a few minutes after completion of the operation.

In Churchill's experience,

> active tuberculosis of the pericardium may produce the entire syndrome of chronic constrictive pericarditis. The point at issue is whether operation can be effective if performed during the active stage of the infection. The reports in the literature of operations during this period are uniformly discouraging and confirm our personal experience.

Beck states that "as long as the tuberculosis shows activity, one cannot expect to relieve the cardiac compression."

Four proved cases of active tuberculous pericarditis in which patients were either cured or markedly improved by pericardiectomy form the basis of this report. Our experiences have led to certain conclusions quite at variance with those expressed by Blalock, Beck and Churchill. However, in suggesting a new approach to the problem, we freely concede that streptomycin and other antibiotics are of primary importance in modifying previous conceptions as to treatment. In two cases the unique opportunity was presented in a government hospital to observe the illnesses uninterruptedly for a number of months from the period of effusion to the development of disabling compression by the contracting pericardium.

REPORT OF CASES

CASE 1.—L. M., aged 27, a Negro man, entered Fort Miley Hospital on Oct. 18, 1947 with shortness of breath of three weeks' duration and fever and sweats of two weeks' duration.

Physical examination revealed a blood pressure of 118/70, a temperature of 100.8 F., a respiratory rate of 20 and a pulse rate of 80. The heart was enlarged to percussion, and there was a loud pericardial friction rub over the precordium, maximal at the apex. The red blood cells numbered 3,700,000; the white blood cells, 6,700, with a normal differential distribution, and the hemoglobin level was 11.5 Gm. per 100 cc. The sedimentation rate was 63 mm. per hour (Westergren), and results of urinalysis were normal. Wassermann and Kahn reactions were negative. Agglutination tests for Brucella, tests for sicklemia and blood cultures were all negative. The tuberculin skin reaction (1: 10,000) was markedly positive. Gastric washings were negative for pathogens on culture and guinea pig inoculation. A roentgenogram of the chest and fluoroscopy on entry showed cardiac enlargement to the right and left, with feeble cardiac pulsations (fig. 1). The venous pressure in the arm was 15.8 cm. of water. Circulation (arm to tongue) time was 23 seconds (decholin® [dehydrocholic acid]).

A diagnosis of pericarditis with effusion was made, but an attempt at pericardial paracentesis two days following the entry yielded no fluid.

From the Stanford University School of Medicine and the San Francisco (Fort Miley) Veterans Administration Hospital.

[1] Riesman, D.: Primary Tuberculosis of the Pericardium, Am. J. M. Sc. 122: 6-20 (July) 1901. Beliet. S.; McMillan, T. M., and Gouley, B. A Tuberculous Pericarditis: A Clinical and Pathologic Study Bsed upon a Series of Seventeen Cases, M. Clin. North America 18: 201-218 (July) 1934. Clarke, J. A., Jr.: Clinically Primary Tuberculous Pericarditis, Am. J. M. Sc. 177: 115-121 (Jan.) 1929. Thompson, W. P.: Primary Tuberculosis of the Pericardium, J. A. M. A. 100: 642-645 (March 4) 1933.

[2] Harvey A. M., and Whitehill, M. R.: Tuberculous Pericarditis, Medicine 16: 45-94 (Feb.) 1937.

[3] Blalock, A., and Levy, S. E.: Tuberculous Pericarditis, J. Thoracic Surg. 7: 132-152 (Dec.) 1937.

The early temperature of 102 to 103 F. gradually declined over the first 30 days of hospitalization. The pericardial friction rub could no longer be heard after three weeks, although the paradoxical pulse remained. Roentgenograms of the chest showed a remarkable diminution in the cardiac silhouette from a diameter of 21 cm. on October 20 to 15 cm. on October 31 (fig. 1). During the next four months there developed a marked shortness of breath on effort, feeling of constriction in the lower part of the chest, swelling of the ankles, feeling of abdominal distention, epigastric discomfort and weakness.

Physical examination in April 1948 revealed a blood pressure of 100/80; a pulse rate of 100; somewhat muffled heart sounds; the pulmonic second sound louder than the aortic second sound; an enlarged and tender liver; mild ascites, and pitting peripheral edema.

On April 9 the vital capacity was 2,000 cc. On April 27 venous pressure in the arm was 35 cm. of water; in the leg, 40 cm., and circulation time, 35 seconds. A roentgenogram of the chest on April 13 showed a left pleural effusion (fig. 1). The cardiac outline was generally enlarged. Fluoroscopically there was no perceptible cardiac pulsation visible over any chamber. The electrocardiogram showed low voltage of the QRS complexes, and T waves inverted in all leads (fig. 2).

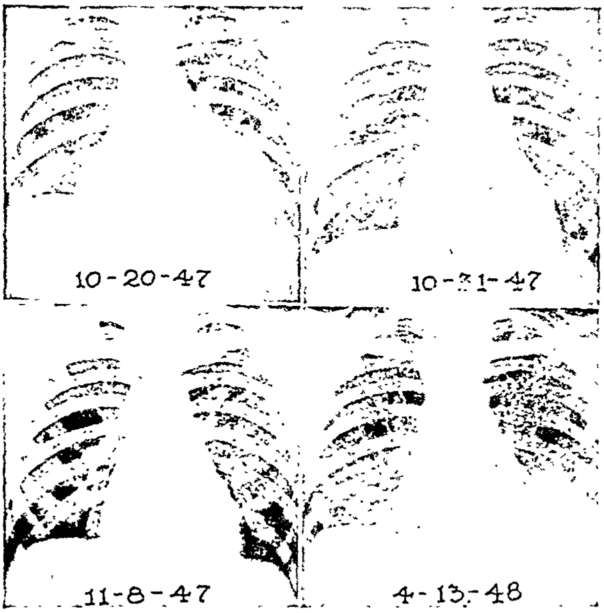

Fig. 1 (case 1).—Roentgenograms on admission (Oct. 20, 1947) revealed a pericardial effusion, which disappeared rapidly on bed rest, with prompt reduction in size of cardiac shadow (October 31) and practically normal cardiac shadow on November 8. Five months later (April 13, 1948) he presented all the features of cardiac compression, including a left pleural effusion.

Liver function tests showed a slight impairment of function; the sulfobromophthalein sodium excretion test showed 23 per cent retention; zinc turbidity reaction, 20 units; thymol turbidity reaction, 10 units (normal, 5 units), and the cephalin flocculation reaction, negative. The sedimentation rate had dropped after one month's hospitalization to 38 mm. per hour, after two months to 20 mm. and after four months to 13 mm. On May 4 the temperature was 98.6 F., pulse rate 80 and respiratory rate 20.

On May 5 pericardiectomy was performed with the patient under intratracheal cyclopropane anesthesia.[4] The thickness of the pericardium varied from 0.5 cm. to 1.5 cm. A small tubercle and considerable granulation tissue were present over the anterior surface of the heart. The pericardium was excised from beyond the left border to beyond the right border, from the inferior border of the heart and from around the inferior vena cava. The sternum was reapproximated with three steel wire sutures. Five hundred cubic centimeters of blood was administered during the operation.

Pathological study of the removed pericardium revealed chronic tuberculous pericarditis. Fluid obtained from the pericardium yielded tubercle bacilli both on culture and on guinea pig inoculation.

Oxygen, streptomycin and penicillin were administered after the operation. Administration of oxygen was discontinued on the third day and of penicillin on the seventh day, but the streptomycin was administered for three months, 2 Gm. daily for four days and 1 Gm. daily thereafter.

Roentgenograms of the chest after the operation (fig. 3) showed a right-sided hydrothorax, which steadily diminished in volume. A distinct shift of the mediastinum on change of position was also demonstrable by roentgenograms, the distance from the right border to the right thoracic wall being 10.4 cm. when the patient was lying in the left lateral decubitus position and 5.4 cm. when he was lying on the right side.

On July 28 circulation (arm to tongue) time was 14 seconds, and venous pressure in the arm was 11 cm. of water. On August 17 the electrocardiogram was practically normal (fig. 2). On December 21 the patient was apparently completely recovered. His vital capacity was 3,000 cc., and his blood pressure was 118/78.

On May 23, 1949 he was readmitted to Fort Miley Hospital because of a left-sided pleural friction rub, presumably tuberculous in origin, for which he was given a course of dihydrostreptomycin therapy. On November 5 he was apparently normal, with a blood pressure of 120/70 and normal heart sounds. A roentgenogram revealed slight residual evidence of the pleurisy at the base of the left lung (fig. 3).

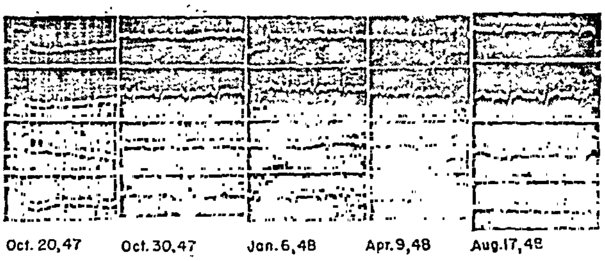

Fig. 2 (case 1).—Oct. 20, 1947: electrocardiogram in the presence of a pericardial effusion showed low voltage in the QRS complex, inverted T waves in leads 1 and 4 and flat T waves in leads 2 and 3. October 30: normal electrocardiogram with increased QRS voltage and upright T waves accompanied the subsidence of effusion and resulting reduction in cardiac compression. Jan. 6 and April 9, 1948: the reappearance of cardiac constriction was accompanied with decreased QRS voltage and inverted T waves. August 17: pericardiectomy on May 12 was followed by marked improvement in QRS voltage and by upright T waves in leads 1, 2 and 3.

Case 2.—G. J., a Chinese youth aged 20, was admitted to Fort Miley Hospital on July 19, 1947 with fever, general weakness, cough and dyspnea that had confined him to bed for the previous 10 days. Physical examination revealed a temperature of 102 F.; a pulse rate of 104; a respiratory rate of 28, and a blood pressure of 100/60. The cardiac dullness was enlarged, and a pericardial friction rub was heard over the entire pericardium. A tentative diagnosis of tuberculous pericarditis was made.

Laboratory studies revealed a sedimentation rate of 97 mm. per hour, a vital capacity of 2,209 cc., a venous pressure of 14 cm. of water and a circulation time of 13 seconds. The tuberculin reaction was 3 + in 48 hours. Red blood cells numbered 3,500,000 and white blood cells 5,500. The hemoglobin level was 10.5 Gm. per 100 cc. At fluoroscopy on August 7 pulsations were absent, the cardiac shadow was enlarged, and a diagnosis of pericardial effusion was made. On bed rest the cardiac shadow regressed remarkably within three weeks' time (fig. 4).

On November 4 we aspirated 1,200 cc. of turbid fluid from the left chest. On November 24 and thereafter 0.5 Gm. streptomycin was administered intramuscularly twice daily. We removed 100 cc. of yellow fluid from the right chest on December 15. On December 29 venous pressure was 17.5 cm. of water, and circulation time was 34 seconds. Further studies revealed a cephalin flocculation of 4 +, icteric index of 15.8 and thymol turbidity of 10 units. At this time, five months after admission, the pleural effusion, the increased venous pressure, the small heart with distant sounds, the full abdomen with the evidence of mild ascites, the electrocardiographic evidence of low voltage in the QRS complex and the inverted T waves all suggested the diagnosis of constrictive pericarditis.

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[4] Holman, E., and Willett, F.: The Surgical Correction of Constrictive Pericarditis, Surg., Gynec. & Obst. 89: 129-144 (Aug.) 1949. Holman, E.: The Recognition and Correction of Constrictive Pericarditis, J. Thoracic Surg. 18: 643-651 (Oct.) 1949.

We removed 750 cc. of amber fluid from the right chest on Jan. 21, 1948; 500 cc. on February 9; 800 cc. on February 26; 2,100 cc. on April 5, and 2,100 cc. on May 7.

On April 27 the vital capacity was 2,000 cc. On May 4 swelling of the lower extremities was observed. Venous pressure in the right arm was 30 cm. of water, and in the right leg, 34 cm. of water. White blood cells numbered 6,750; red blood cells, 5,490,000, and the hemoglobin level, 14 Gm. per 100 cc. On May 11 the patient's temperature was 98.4 F., pulse rate 110 and respiratory rate 20.

On May 24 a pericardiectomy through a median sternotomy was performed. When the pericardium was opened, about 300 cc. of turbid yellow fluid escaped under pressure; the heart itself was covered with yellowish granular material, and caseating tuberculous granulation tissue was encountered in several areas. Calcified deposits were present in the epicardium of the right ventricle and right atrium, the attempted removal of which was promptly discontinued because of its hazard. Before closure the operative area was flooded with saline solution containing 2 Gm. of streptomycin and 2,000,000 units of penicillin.

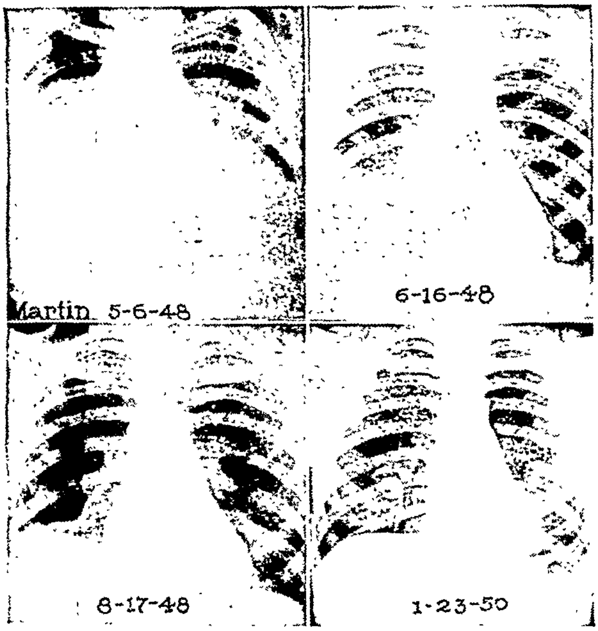

Fig. 3 (case 1).—Pericardiectomy performed on May 5, 1948. The right-sided hydrothorax slowly subsided following drainage of only 100 cc. reddish fluid through an intercostal catheter on the first day and aspiration of 280 cc. fluid on the second day. No further aspirations were necessary. Follow-up examination on Jan. 23, 1950 showed only mild pleural thickening on the left, incident to an attack of pleurisy in May 1949.

To drain the operative area, the right pleural cavity, which had been entered in the exposure of the right cardiac border and the vena cava, was not closed but was drained to the outside by a large mushroom catheter placed in the sixth interspace in the anterior axillary line. The sternum was reapproximated with no. 20 stainless steel wire. The pulse rate at the end of the operation was 108, and the blood pressure was 100/70.

Microscopic studies of the excised pericardium revealed chronic granulomatous tissue consistent with tuberculosis. Cultures yielded tubercle bacilli.

In the first 24 hours 1,100 cc., and in the next 24 hours 400 cc., of serosanguineous fluid escaped through the catheter; none escaped thereafter.

On July 14 we aspirated 700 cc. of slightly turbid yellow fluid from the right chest; 1,150 cc. was removed on July 29, and on August 17 the last aspiration yielded 470 cc. (fig. 5).

On December 6 the venous pressure was 18 cm. of water (right arm) and 30 cm. of water (right leg). The circulation (arm to tongue) time was 28 seconds, and the blood pressure was 120/80. The patient was discharged to his home on Jan. 29, 1949. On November 15 the blood pressure was 120/70; the pulse rate was 76; the venous pressure was 13 cm of water, and the circulation time was 18 seconds. The patient was attending college, carrying a half-time program without difficulty. A completely normal cardiac shadow was demonstrated by roentgenogram on Jan. 23, 1950 (fig. 5).

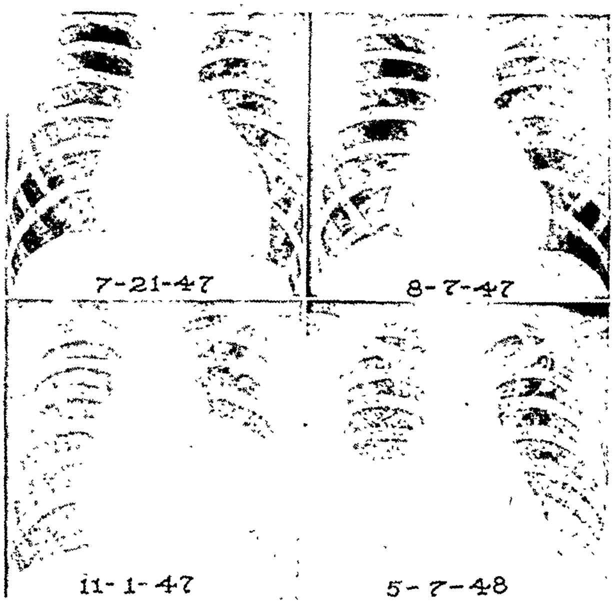

Fig. 4 (case 2).—Roentgenograms on July 21, 1947, two days after admission, showed an enlarged cardiac shadow that receded rapidly on bed rest (August 7). On November 1 the roentgenograms revealed a left pleural effusion followed by a persistent right pleural effusion requiring five aspirations before pericardiectomy on May 24, 1948.

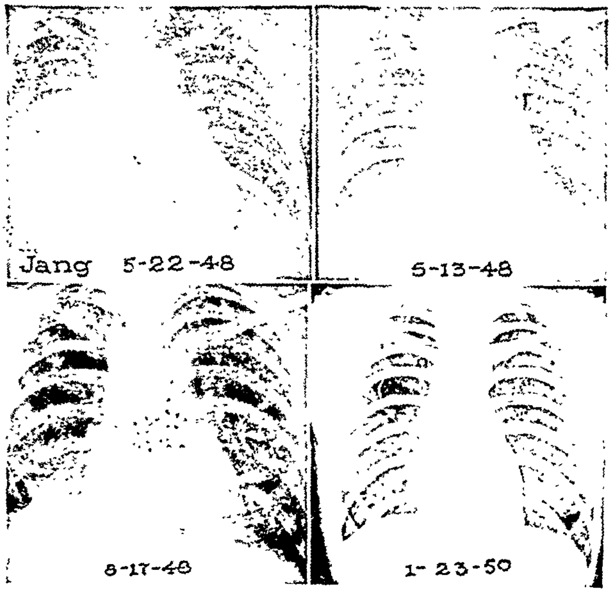

Fig. 5 (case 2).—After pericardiectomy on May 24, 1948, pleural effusion on the right necessitated repeated aspirations totaling 4,250 cc. of fluid, the last aspiration, on August 17, yielding 470 cc. No further accumulation of fluid occurred. A completely normal cardiac shadow was demonstrated on Jan. 23, 1950.

Case 3.—A 20 year old Mexican was referred to Stanford University Hospital from the Monterey County Hospital on Nov. 27, 1948 with the diagnosis of constrictive pericarditis. The records of the latter hospital revealed an entry in January 1945 for cough and excessive sweating in school but with no significant physical findings. He appeared again at that hospital in May 1948, with the complaint of dizziness, fatigue, anorexia, persistent cough with occasional blood streaking, weight loss of about five months' duration and a swollen abdomen of about two months' duration. Significant findings at this time included a strongly positive tuberculin skin reaction (1: 1,000), sputum negative for tubercle bacilli and a sedimentation rate of 13 mm. (Cutler). He left the hospital against advice but returned in September 1948 in a state of great dyspnea; he was relieved by an emergency paracentesis of the abdomen. After this his liver was found to be large, his spleen palpable and the venous pressure in the arm 23 cm. of water. The sedimentation rate was 16 mm. (Cutler); serum proteins, 7.1 Gm. per 100 cc., and icterus index, 7. There was mild cardiac enlargement, and the blood pressure was 100/70. On fluoroscopy no cardiac pulsations were discernible because of presumed thickening of the pericardium. Since that observation, four tappings of the abdomen had been necessary.

On admission to Stanford University Hospital the patient gave an additional history of puffiness of the eyes, ankle swelling, exertional dyspnea and fatigue for as much as 18 months previously.

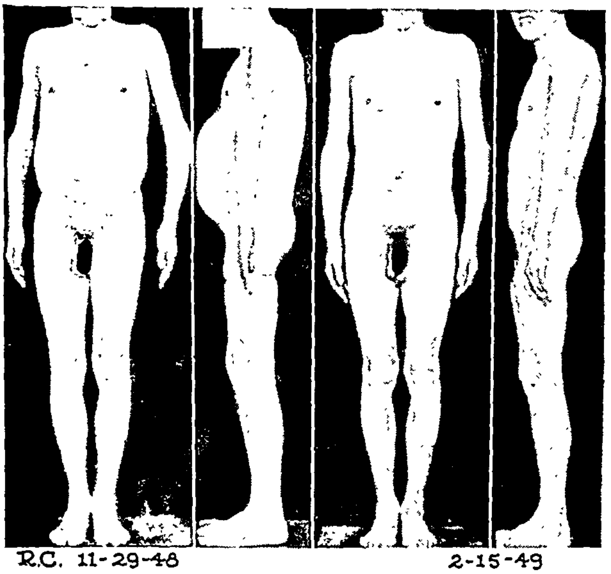

Fig. 6 (case 3).—Marked ascites in the presence of a constrictive tuberculous pericarditis (Nov. 29, 1948) was completely controlled (Feb. 15, 1949) by pericardiectomy on Dec. 9, 1948.

Significant physical findings on admission were the following: no visible cardiac movements, a very slight apical beat palpable in the fifth interspace in the nipple line, a pulse rate of 80, a blood pressure of 110/80, clear heart sounds, no paradoxical pulse, a significantly distended and tense abdomen (fig. 6), slightly blue and cold hands and feet and pitting edema of both ankles.

Further studies revealed a vital capacity of 2.3 liters; a venous pressure in the right arm of 42 cm. of water and in the right leg of 46.5 cm. of water, which rose 17.0 cm. of water on compression of the abdomen; a circulation time of 23 seconds; a sedimentation rate of 3 mm. per hour; a prothrombin time 100 per cent normal, and a cephalin flocculation of 1 +. The serum protein level was 6.23 Gm. per 100 cc. (albumin 3.3 Gm., globulin 2.8 Gm): blood urea, 25 mg. per 100 cc.; icterus index, 20; erythrocytes, 4,900,000; a hemoglobin level, 14.5 Gm. per 100 cc.; the hematocrit value, 41 per cent, and leukocytes, 7,300. The urine was normal. Roentgenograms revealed a moderate bilateral pleural effusion, more marked on the right, with a moderately enlarged cardiac silhouette (fig. 7). A kymogram showed no pulsation (fig. 8).

On December 4 paracentesis of the abdomen yielded 9,500 cc. of fluid.

The admission diagnosis having been confirmed, pericardiectomy was performed on December 9. On exposure the heart showed almost no pulsation, but after excision of the thickened pericardium there was vigorous pulsation of both ventricles, and the systolic pressure had risen 10 points at the completion of the operation.

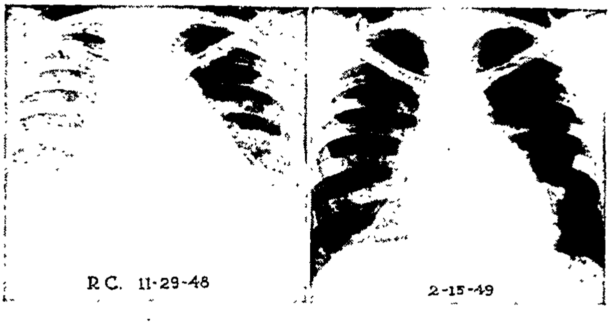

Fig. 7 (case 3).—Cardiac shadow in the presence of constrictive pericarditis was moderately enlarged, with a moderate bilateral pleural effusion, greater on the right, and elevated diaphragms due to ascites. The postoperative roentgenograms (Feb. 15, 1949) showed normal pulmonary fields and normally situated diaphragms.

Seven days after the operation the venous pressure in the right arm had dropped to 30 cm. of water, and when the patient was seen two months later, on Feb. 15, 1949, the venous pressure was 5 cm. of water in the arm and 15 cm. of water in the leg. On December 23 paracentesis of the abdomen again yielded fluid (7 liters), this being the last tapping necessary.

The pericardium examined microscopically showed an appearance suggestive of tuberculosis, and inoculation of a guinea pig yielded tubercle bacilli.

Follow-up studies on February 15 showed a blood pressure of 120/80, a pulse rate of 80 and a vital capacity of 4.3 liters. The patient had lost his dyspnea, and within a few months he returned to normal work and activity.

Case 4.—M. C., a physician aged 30, was transferred from Permanente Hospital, Oakland, Calif., to Stanford University Hospital on Jan. 18, 1949 with a probable diagnosis of tuberculous pericarditis. His illness began about Oct. 28, 1948 with a presumed respiratory tract infection followed by fever, malaise, fatigue, chills, profuse sweating, mild headache and a cough productive of greenish sputum.

On November 3 he had been admitted to Permanente Hospital, where physical examination had revealed a moderately enlarged heart without murmurs or friction rub, a blood pressure of 110/64 and a normal liver. Two days later a definite pericardial friction rub had become audible, and four days after admission there had been precordial pain, hepatic tenderness and a palpable liver. On November 10 circulation time (calcium gluconate) was 20 seconds.

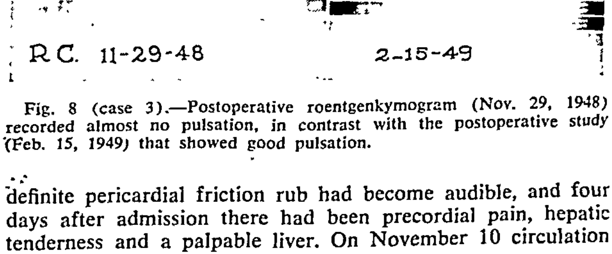

Fig. 8 (case 3).—Postoperative roentgenkymogram (Nov. 29, 1948) recorded almost no pulsation, in contrast with the postoperative study (Feb. 15, 1949) that showed good pulsation.

Administration of penicillin was begun on November 18 in a dose of 600,000 units twice daily, with 4 to 6 Gm. of sodium salicylate daily. These had been discontinued on

December 9 and 14 respectively. By December 16 the to and fro friction rub had again become audible over the precordium, and the patient appeared acutely ill. The pulse rate was 100, and the liver became palpable to the umbilicus. On December 18 the circulation time was 28 seconds, and generalized edema of face and extremities and obvious ascites had appeared, followed by evidence of increasing pericardial and right pleural effusions. On Jan. 12, 1949 administration of 4 Gm. of aureomycin hydrochloride U.S.P. daily had been administered without improvement. Lanatoside C U.S.P. and mercurophylline had been administered with excellent diuresis. On admission, January 18, physical examination revealed a tired, weak, icteric, slightly cyanotic patient with puffiness of the eyes and obviously distended veins of the neck. His temperature was 101.1 F. (38.4 C.), pulse rate 124 and respiratory rate 26. Almost the entire right side of the chest was dull to percussion, with suppression of breath sounds and slight shift of the apex beat of the heart to the left. The left chest was clear. The heart was not large; the sounds were muffled, and there were no murmurs, but both pericardial and pleural friction rubs were present. His blood pressure was 96/70 and varied with respiration. The abdomen contained free fluid; the liver was hard and enlarged to the level of the umbilicus. There was some ankle edema. Venous pressure in the right arm was 32.5 cm. of water, which rose to 40.9 cm. of water on abdominal compression. Circulation (arm to tongue) time was 43 seconds. Blood urea was 31 mg. per 100 cc., bilirubin, direct 0.9 mg. per 100 cc., total 1.9 mg. per 100 cc. Roentgenograms of the chest showed a large right pleural effusion and a slightly enlarged heart, and on fluoroscopy and kymography the pulsations were definitely decreased in the lower half of the left cardiac border. The tuberculin skin reaction (1: 10,000) was strongly positive in 48 hours. Red blood cells numbered 5,130,000, white blood cells, 10,150; neutrophils 83 per cent, 15 per cent of which were banded; 9 per cent lymphocytes; 8 per cent monocytes, and a hemoglobin level of 15.3 Gm. per 100 cc.

The electrocardiogram on January 18 showed the QRS complex to have an abnormally low voltage, and the T waves were flat in lead 1 and inverted in leads 2 and 3.

On January 20 thoracentesis yielded 1,100 cc. of clear fluid; on March 18 the fluid was reported negative for tubercle bacilli on culture and guinea pig inoculation. On January 21 administration of dihydrostreptomycin U.S.P., 1 Gm. daily, was begun, but little improvement was noted in the next two weeks. Aspiration of the right chest yielded 1,100 cc. of clear fluid on February 4, an additional 1,000 cc. on February 8, a further 950 cc. on both February 10 and 12 and 250 cc. on February 19.

The sedimentation rate on February 15 was 27 mm. per hour. On February 18 venous pressure in the right arm was 24.6 cm. of water, and the circulation (arm to tongue) time was 48.8 seconds. Blood protein determination showed 5.25 Gm. per 100 cc., with an albumin-globulin ratio of 3.12:2.18. On March 3 the vital capacity was 2.1 liters, the venous pressure 27.4 cm. of water and the circulation time 35 seconds.

On March 5 subtotal pericardiectomy was performed through a midsternal incision. During the necessary manipulations the blood pressure on several occasions dropped to zero, but at the end of the decortication there was considerable improvement in the vigor of cardiac contraction. The myocardium itself showed significant fibrosis and granulation tissue over its surface. Five hundred cubic centimeters of blood and 500 cc. of salt solution were administered during the operation.

An interesting improvement noted by the patient on the first postoperative day was a feeling of warmth in his hands and feet, which formerly had always felt uncomfortably cold. The pulse was no longer paradoxical. There was a great deal of generalized sweating the first few days, and the urinary output was only 325 cc. in the first 48 postoperative hours despite an intake of 8,100 cc., including 5,000 cc. of fluids on the day of the operation (3,000 cc. by vein, 1,000 cc. by proctolysis and 1,000 cc. by mouth). On the third and fourth days the urinary output became adequate, and there was no further evidence of kidney impairment.

The postoperative course was one of exceedingly slow though steady improvement (fig. 9) under the administration of streptomycin, 2 Gm. daily, and digitoxin, 0.2 mg. daily. Four hundred cubic centimeters of amber fluid was removed from the right chest on August 1 and 200 cc. on December 1. The liver slowly receded in size, and by December it was no longer felt. Bilateral mastitis, which had appeared during the patient's illness probably as a result of impairment of liver function, disappeared about October 15.

The following observations were made on December 12: prothrombin activity, 55 per cent of normal; sedimentation rate, 17 mm. per hour; hemoglobin level, 75 per cent; red blood cells, 3,700,000; neutrophils, 4,600; temperature, 98.3 F.; pulse rate, 80; respiratory rate, 20, and venous pressure, right arm, 15 cm. of water.

The patient, though not at work, was active and considered himself well on the road to complete recovery.

COMMENT

The striking features common to all four cases at the time of operation were, first, the advanced state of cardiac impairment as evidenced by ascites and pleural effusion and, second, the relentless and progressive course of the disease from its inception, as exemplified by the slowly increasing disability imposed by cardiac compression. Clinical, roentgenographic and electrocardiographic evidence in the first two cases indicated that this compression was first produced by a pericardial effusion, which then subsided, only to be followed promptly by the development of compression due to gradual contraction of the fibrous pericardium.

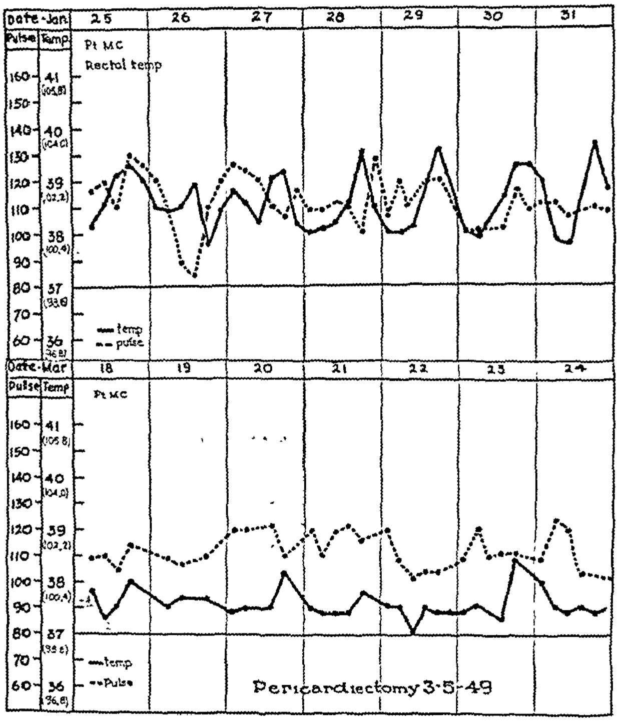

Fig. 9 (case 4).—Persistent fever and rapid pulse without abatement characterized the clinical course for three months preceding pericardiectomy on March 5, 1949, followed by prompt though slow reduction in both fever and pulse rate, which returned to normal only after months of confinement in the hospital.

The prolonged course of the disease before operation in the first two cases, nine months in case 1 and 11 months in case 2, at once raises the question whether the decompression pericardiectomy should have been performed at an earlier date. In retrospect, the answer is unequivocally affirmative. Reviewing our cases critically, we now believe that the operation in case 1 could have been performed with profit and safety in November or December 1947 instead of May 1948.

Similarly, in case 2 the patient gave unequivocal evidence two months after admission of a pericardial effusion with signs of cardiac compression. In retrospect, this was the auspicious moment for operation, rather than eight months later after a prolonged period of increasing ascites and persistent right hydrothorax necessitating seven aspirations for a total of 7,550 cc. of fluid. During the operation a large intrapericardial pocket of tuberculous pus was found to be a factor in the cardiac compression from which a positive culture of tubercle bacilli was obtained. Primary healing and apparently complete cure followed a radical pericardiectomy.

In case 3 an opportunity for more radical treatment was presented in May 1948 at a time of only moderate abdominal effusion, but the patient's own intransigence precluded such a decision at that time, since he left the hospital against advice. He did not reappear until September, when he was completely incapacitated by the mechanical effects of the disease. An emergency abdominal paracentesis was required to relieve his symptoms. The operation, however, was not performed until December, and again valuable time was lost, with gradual progression of the disease.

In case 4 the period between the development of unequivocal symptoms of cardiac compression and the subsequent radical pericardiectomy for their relief was much shorter, but a month or two could have been saved, which undoubtedly would have been of great advantage in reducing the extent of myocardial damage and in shortening the length of a prolonged and troublesome convalescence.

Emboldened by these experiences, we wish to suggest the formulation of a rule that at the moment a diagnosis of cardiac compression can be made (in a case of presumed tuberculous pericarditis) an operation for cardiac decompression should be considered, regardless of whether this compression is noted in the stage of pericardial effusion or in the stage of pericardial constriction. This would provide early liberation of the heart from the adverse mechanical effects of the disease and would permit a more efficient combating of the inflammatory component. Technically, such excision of the pericardium can be performed in the presence of a pericardial effusion with considerably greater ease than is possible at a later stage, when the pericardium and the epicardium have become inextricably merged. At this earlier stage there also would undoubtedly be a greatly reduced involvement of the myocardium, which at the time of the operation was found far advanced in cases 2 and 4.

Heretofore patients with pericardial effusion ascribed to tuberculosis have been treated medically by prolonged bed rest, with expectation that the effusion would reabsorb, as indeed it did in cases 1 and 2, only to be followed in these two cases by compression due to contracture of an inflamed and thickened pericardium. Should circumstances indicate that such improvement is not taking place, that a pericardial effusion with high fever persists and that the patient remains in a precarious condition, largely the effect of compression due to the effusion, an operation should be considered at once. If the operation is decided on for a very ill patient, it might be undertaken in two stages, the first operation to consist of removal of the sixth left costal cartilage for evacuation of the pericardial fluid, followed 10 to 20 days later by the usual midsternal incision and radical pericardiectomy. The first operation might include the introduction of a drain into the pericardial space. The drain should escape from the chest through a separate laterally placed stab wound, thus permitting complete closure of the first incision and also permitting at the second operation the use of a centrally placed incision independent of both the first incision and the drainage tract. The usual adverse effects of a drain leading from the skin surface into the pericardium would be obviated during the brief period between operations by streptomycin and penicillin therapy. It would be expected that sufficient improvement would occur after the evacuation of the tuberculous effusion to make the more prolonged and more hazardous but imperative radical pericardiectomy a safer procedure within 10 days to two weeks.

At the present time it is axiomatic that for any patient suspected to have tuberculous pericarditis the administration of streptomycin would be part of the preoperative and postoperative treatment, as in cases 1 and 4. Optimum nutrition is also strongly stressed, with particular reference to supplementary vitamins and fresh citrus juices as a source of vitamin C.[5]

It is confidently predicted that in most cases of tuberculous pericarditis an operation can be performed earlier in the course of the disease than has heretofore been practiced, and that much valuable time, even life itself, will be saved by so doing.

SUMMARY

Tuberculous pericarditis is characterized by a prolonged course, exhibiting in the acute stage chills, sweats, fever, rapid pulse, dyspnea, increased sedimentation rate, leukocytosis, anemia, pericardial friction rub and pericardial effusion sufficient at times to produce cardiac and vena caval compression as shown by increased venous pressure, absence of ventricular pulsations on fluoroscopy and reduced voltage in the QRS complex and inverted T waves in the electrocardiogram. Such effusion may persist or may subside, as shown by reduction in the size of the cardiac shadow. Such subsidence of signs of effusion may be followed promptly by the signs and symptoms of cardiac compression due to contracture of the inflamed and thickened pericardium. The venous pressure may again become greatly elevated; persistent pleural effusion may necessitate repeated aspirations; ascites may develop, and complete and chronic invalidism may follow. It is suggested that the insidiously and relentlessly progressive character of tuberculous pericarditis demands consideration of operation at a much earlier stage than has heretofore been practiced, and that pericardiectomy should be performed at the time of pericardial effusion,

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[5] Holman, E.: Pre-operative and Postoperative Care, editorial, Surgery 1: 637-639 (April) 1937. Holman, E.: Vitamin and Protein Factors in Pre-operative and Postoperative Care of the Surgical Patient, Surg., Gynec. & Obst. 70: 261-269 (Feb. 15) 1940.

particularly if evidence of cardiac and vena caval compression is present. It is strongly urged that when the diagnosis of cardiac compression can be made clinically, either in the stage of pericardial effusion or in the stage of pericardial contracture, there is great need for prompt cardiac decompression. In a very ill patient with tuberculous pericardial effusion such decompression might best be effected by removal of the left sixth costal cartilage for evacuation and drainage of the pericardium, followed at a second stage 10 to 20 days later by median sternotomy and complete anterior pericardiectomy. Despite improvement after the first operation, the second operation must not be omitted.

Four patients with proved tuberculosis of the pericardium, in all of whom the disease was active at the time of operation as indicated by positive cultures of tubercle bacilli in three and by the demonstration of tubercle bacilli in the tissues of the fourth, were treated by radical pericardiectomy with resulting cure in three and marked and still progressive improvement in the fourth. All operative areas healed by first intention, despite the presence in the pericardium of active tubercle bacilli.

ADDENDUM

Since this article was written, a fifth case of tuberculous pericarditis, in a 20 year old man, has been reported. A radical pericardiectomy was performed in the stage of effusion, persistent high fever and an active tuberculous process as disclosed by positive culture. This was performed three months after the appearance of the first disabling symptoms of fever and effusion and has been followed by prompt and progressive improvement.

BILATERAL CARCINOMA OF MALE BREAST AFTER ESTROGEN THERAPY

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and
Charles C. Higgins, M.D., Cleveland

Cancer of the male breast developing coincident with or after estrogen therapy is an unusual circumstance. Although the pathological changes taking place in the breasts of male experimental animals and also of women receiving estrogen therapy have been well described,[1] there are few cases in the literature concerning malignant changes in the male breast after estrogen administration.

In 1948 Abramson and Warshawsky [2] reported a patient with carcinoma of the prostate, who had received slightly over 1 Gm. of diethylstilbestrol and an uncalculated total amount of estradiol (ovocylin®) dipropionate. In their patient bilateral gynecomastia developed after 489 days of estrogen therapy. However, at autopsy only one breast was studied from a histopathological standpoint, and this was reported to show malignant changes. They further stated that no previous cases of cancer of the human male breast after the use of diethylstilbestrol had been reported.

In 1949 Howard and Grosjean [3] reported a case of microscopically proved bilateral scirrhous carcinoma of the male breast in a patient treated for carcinoma of the prostate with a total of 40,280 mg. of diethylstilbestrol. The patient received only 120 mg. of diethylstilbestrol over a 40 month period followed by a sharp increase in dosage to a total of 40,160 mg. in a 14 month period prior to his death. It was interesting to note in their case that the gynecomastia that developed on the small dosage of diethylstilbestrol changed on the large dosage as the breasts decreased in size and became tenderer but harder in character. In neither of the above cases was there noted a family history of breast cancer.

In 1948 Entz [4] and in 1950 Corbett and Abrams [5] reported a case of male breast malignancy after diethylstilbestrol therapy for carcinoma of the prostate. In each of their cases it was the opinion of the reviewing pathologists that these breast tumors were of metastatic origin rather than primary tumors.

Some time ago the Committee on Research of the Council on Pharmacy and Chemistry of the American Medical Association sent a questionnaire to 150 urologists asking whether or not they had observed breast cancer in any patient treated with estrogens for prostatic cancer.[6] The questionnaire showed that out of a total of approximately 17,000 patients there was only one additional possible case of cancer of the male breast.

REPORT OF CASE

A 56 year old white man entered the Cleveland Clinic on June 6, 1950, for investigation of a malignant lesion of the urinary bladder. The history revealed that two years previously this patient had consulted his family physician because of nocturia, dysuria and frequency. After a cystoscopic examination had revealed a malignant tumor of the bladder, a suprapubic transvesical resection with electrofulguration of the tumor base was performed and suprapubic catheter drainage employed.

During this convalescence he received four deep roentgen therapy treatments with a total of 870 r and, for financial reasons, was transferred to a Veterans' Administration Hospital. On admission, cystoscopic examination again revealed an extensive tumor of the bladder involving the entire base, and at this time a biopsy of the tumor was reported as a transitional cell

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From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

[1] Haagensen, C. D., and Randall, H. T.: Production of Mammary Carcinoma in Mice by Estrogens, Arch. Path. **33**: 411 (April) 1942. Allaben, G. R., and Owen, S. E.: Adenocarcinoma of Breast Coincidental with Strenuous Endocrine Therapy, J. A. M. A. **112**: 1933 (May 13) 1939. Auchincloss, H., and Haagensen, C. D.: Cancer of Breast Possibly Induced by Estrogenic Substance, J. A. M. A. **114**: 1517 (April 20) 1940.

[2] Abramson, W., and Warshawsky, H.: Cancer of Breast in Male Secondary to Estrogenic Administration: Report of Case, J. Urol. **59**: 76 (Jan.) 1948.

[3] Howard, R. R., and Grosjean, W. A.: Bilateral Mammary Carcinoma in Male Coincident with Prolonged Stilbestrol Therapy, Surgery **25**: 300 (Feb.) 1949.

[4] Entz, F. H.: Probable Metastatic Carcinoma of Male Breast Following Stilbestrol Therapy: Case Report, J. Urol. **59**: 1203 (June) 1949

[5] Corbett, D. G., and Abrams, E. W.: Bilateral Carcinoma of Male Breasts Associated with Prolonged Stilbestrol Therapy for Carcinoma of Prostate, J. Urol. **64**: 377 (Aug.) 1950.

[6] Van Winkle, W., Jr.: Personal communication to the authors.

carcinoma grade 2 with squamous metaplasia (fig. 1). The patient then was given two courses of deep roentgen therapy over a five months' period during which time he received 4,400 r to the anterior bladder, 4,200 r to the left posterior oblique, 4,100 r to the right posterior oblique, 1,200 r to the right anterior oblique and 900 r to the left anterior oblique positions. For palliative treatment of the suprapubic pain he was then given the following estrogen therapy at the Veterans' Hospital. For 51 days the patient was given orally a daily dose of 15 mg. of diethylstilbestrol, receiving a total of 765 mg. He received orally 5 mg. of diethylstilbestrol daily for a total of 375 mg. A daily dose of 5 mg. of estradiol (ovocylin[1]) dipropionate was given intramuscularly for a period of 126 days, a total of 630 mg. being administered. For the total period of 126 days, the patient received 1,770 mg. of estrogens. Approximately six weeks prior to the cessation of estrogen therapy the patient noted swelling and tenderness of both breasts, and this progressively increased even after all estrogen therapy had been discontinued. The breasts became enlarged, hard and were moderately tender. There was some evidence of retraction of the nipples, more noticeable on the left side. This condition persisted until his admission to the Cleveland Clinic Hospital.

The past history was noncontributory except for the treatment of a duodenal ulcer since 1943. Family history disclosed that the patient's maternal grandmother had died of carcinoma of the liver; his mother, of carcinoma of the rectum at the age of 67; one sister, living, had breast carcinoma; one sister, living, had cystic disease of the breast; one sister, living, had an undiagnosed breast tumor.

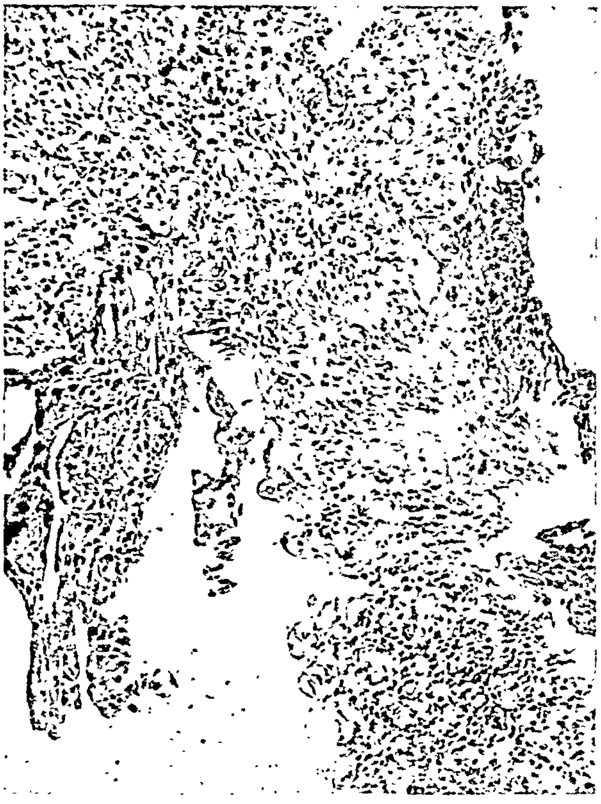

Fig. 1.—Biopsy of bladder tumor. Section of transitional cell carcinoma grade 2 shows papillary structure of dark staining epithelium (× 70).

The physical examination on admission to the Clinic revealed a malnourished, ill appearing white man aged 56. The temperature, pulse and blood pressure were within normal limits, and the heart and lungs were essentially normal to auscultation. Examination of the breasts revealed both to be enlarged to about the size of a lemon and to be hard, tender and erythematous (fig. 2). Retraction of the nipples was noted, but no axillary lymphadenopathy was evident. The digital rectal examination was normal except for the prostatic examination, which revealed a hard, fixed prostatic bed with a broad base suggestive of a bladder neoplasm with extravesical extension. The testes were small. A 3 + pitting edema was noted in both ankles.

Laboratory studies were as follows: white blood count 9,000 per cubic millimeter; red blood count 2,450,000 per cubic millimeter; hemoglobin 6 Gm.; blood sugar 104 mg. per 100 cc.; blood urea 72 mg. per 100 cc.; carbon dioxide combining power 53 volumes per cent; plasma chloride 511 mg. per 100 cc. (NaCl); serological examination was noncontributory; culture of the specimen of urine secured by catheterization revealed Bacillus proteus and Streptococcus fecalis; total serum proteins 5.8 Gm. with albumin fraction 2.8 Gm. and the globulin fraction 3.0 Gm. per 100 cc.; serum calcium 8.6 Gm. and serum phosphorus 6.4 Gm. per 100 cc.; alkaline phosphatase 4.4 Bodansky units; acid phosphatase 0.4 Bodansky units; urinary gonadotrophin assay was less than 6 mouse units per 24 hours; 17-ketosteroid assay 2.2 mg. in 24 hours; 6 per cent sulfobromophthalein (bromsulphalein®) sodium was retained in 30 minutes.

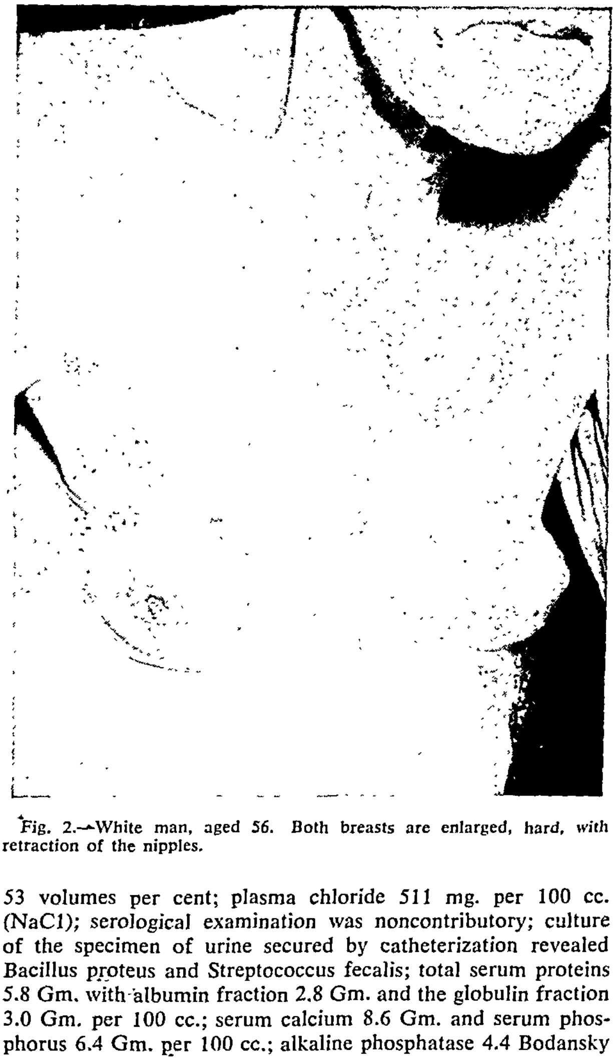

Fig. 2.—White man, aged 56. Both breasts are enlarged, hard, with retraction of the nipples.

The previous roentgen examination of the patient's kidneys at the Veterans' Hospital was reported to have shown a nonfunctioning right kidney and a minimal left hydronephrosis by intravenous urogram; the chest roentgenogram was reported normal. On admission, the initial roentgenogram of the kidneys was normal, and the intravenous urogram showed minimal iodopyracet (diodrast®) clearance within one hour. The chest roentgenogram revealed prominent lung markings in the first left anterior interspace, consistent with an old inflammatory process, and bilateral sharply demarcated shadows in both midlung fields, which were believed to be breasts. The skull roentgenograms showed bone metastasis extending to the calvarium but were otherwise normal.

During the patient's hospitalization breast biopsies were performed, and histopathological examination by Dr. John B. Hazard, Department of Pathology, revealed the specimens from both right and left breasts to be similar. The sections were comprised principally of neoplasm formed by small epithelial cells occurring for the most part as single units distributed through a loosely arranged myxomatous connective tissue stroma but also occurring as short cords and small groups. There was dedifferentiation evidenced by variation in the size and staining of the nuclei and the frequent mitoses. The section of the right breast included a section of skin, the corium of which contained ill defined foci of neoplasm. The pathological diagnosis was bilateral carcinoma simplex of the male breast, a grade 4 dedifferentiation. Biopsies of the testes were also performed, and pathological examination revealed fibrosis of the seminiferous tubules, absence of the gametogenic elements and vacuolation of Sertoli cells. No Leydig cells were identified. A needle biopsy of the prostate was unsuccessful on two occasions. The patient's hospital course has been one of progressive weakness with a gradual elevation of the blood urea.

COMMENT

On the basis of a single case it is not possible for one to evaluate fully the carcinogenic effect of estrogens on male breast tissue. The fact remains, however, that in this instance the breast malignancies were bilateral new growths, histologically different from the primary neoplasm; also there was no breast disease noted prior to the administration of estrogens. The family history of breast and other carcinomas suggests the possibility of activation of male breast malignancy in a patient having a family strain of relatively high cancer incidence. From the experience in this case it is believed that all male patients receiving estrogen therapy should be questioned about their family history relative to breast malignancy and that the character of the breasts should be carefully evaluated prior to and at regular intervals during estrogen therapy.

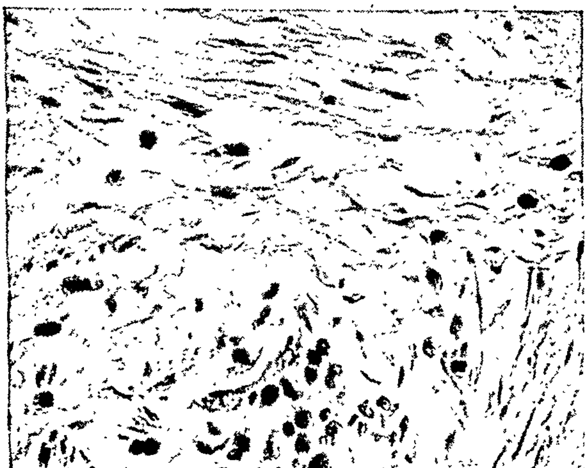

Fig. 3.—Right breast (× 225). Section of carcinoma simplex shows small epithelial cells occurring singly and in short cords and groups in loose stroma.

In the cases we reviewed of breast malignancy in men after estrogen therapy, there is insufficient evidence to conclude that the breast carcinomas were primary in every case, and, with the exception of the case of Howard and Grosjean, the interpretation of the actual relationship of the breast cancer and estrogen therapy is difficult.

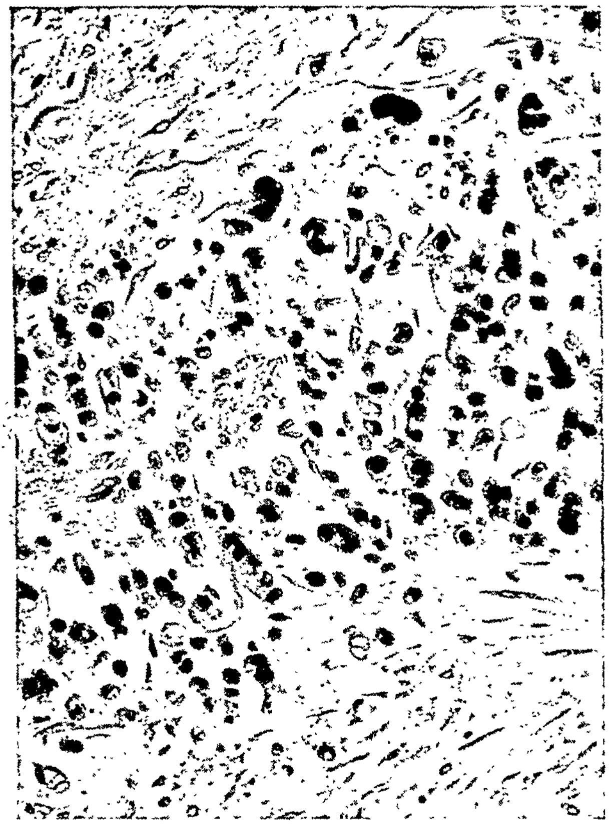

Fig. 4.—Left breast (× 225). Section of carcinoma simplex is similar to that of right breast.

SUMMARY

A case of bilateral male breast carcinoma after estrogen therapy is reported in a patient with carcinoma of the urinary bladder and with a family history of breast carcinoma.

Ten Extra Miles a Day.—All methods of reducing the obese of excess fat are effective only insofar as they aid in producing and maintaining a calorie deficit. A calorie deficit can be obtained either by increasing the calorie expenditure or by decreasing the calorie intake, or by both methods. There is an exaggerated idea of the value of exercise in producing a calorie deficit. For the average person a walk of one mile at the rate of 2 miles per hour leads to the expenditure of 100 extra calories. Therefore, to lose 2 pounds of adipose tissue by this type of exercise alone, the average person would have to walk 10 extra miles each day for one week without increasing the food intake. This is difficult because exercise usually increases the appetite. Therefore a considerable and sustained increase in calorie expenditure by exercise for most obese persons is impractical. On the other hand, to lose 2 pounds of adipose tissue by diet while maintaining the same calorie expenditure—that is, without additional exercise—the obese person needs to eat daily for one week 1,000 calories less than the calorie expenditure.—The "Performance Index" as a Method for Estimating Effectiveness of Reducing Regimens, Norman Jolliffe and Elmer Alpert, *Postgraduate Medicine*, February 1951.

PROGRESSIVE SPINAL CORD DISEASE

SYNDROMES ASSOCIATED WITH HERNIATION OF CERVICAL INTERVERTEBRAL DISKS

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and
Theodore J. C. von Storch, M.D., New York

The striking similarity between the signs and symptoms of certain diffuse degenerative disorders of the spinal cord and those due to herniation of cervical intervertebral disks was first emphasized by Stookey in 1928 and again in 1940.[1] Confirmation of these observations has come from many sources. The means whereby midline pressure may produce such syndromes was described by Kahn in 1947.[2] Bucy and his associates reviewed the subject in 1948 [3] and presented four cases of herniation of cervical intervertebral disk simulating such degenerative disorders of the spinal cord. Den Hartog Jager and Moffie in 1949 [4] reported nine patients with similar cases treated during the preceding nine years in the neurological clinic at the Wilhelmina-Gasthuis, Amsterdam University. In spite of these reports, too little attention has been paid to this important subject.

The purpose of this report is to reemphasize the necessity for the early recognition and treatment of surgically amenable lesions causing compression of the cervical portion of the spinal cord. This compression may result in syndromes closely resembling certain progressive diseases affecting the spinal cord such as multiple sclerosis, combined systems disease, amyotrophic lateral sclerosis or syringomyelia. Careful scrutiny will, however, reveal each such syndrome to be atypical in some significant respect; for example, absence of signs or symptoms due exclusively to a disease condition above the foramen magnum or absence of one or more characteristics of each syndrome. At times a history of injury can be elicited. Usually there is no such history, no pain or tenderness and no other evidence of a cervical mass.

The cases herein described differ somewhat from those previously reported. In our series the symptoms were insidious in onset, and the course was unusually prolonged. One of our patients has a history of remissive progression for 16 years. The implications of this are tragic.

We have recently studied six cases of surgical lesions simulating various degenerative diseases. These have been considered with some authority to belong in the following categories: unspecified degenerative cord disease, 1 case; syringomyelia, 1 case; multiple sclerosis, 2 cases; amyotrophic lateral sclerosis, 1 case, and combined systems disease, 1 case.

Certain clinical facts common to these cases require considerable emphasis. Analysis of the course of the disorder revealed the symptoms to be progressive, without significant remission. The signs were almost indistinguishable from those of the disorders mentioned above. However, at no time did any of these patients complain of symptoms or exhibit signs of lesions of the nervous system above the cervical portion of the spinal cord. One patient in whom amyotrophic lateral sclerosis had been previously diagnosed presented classical fasciculations in all four extremities and over the trunk. This patient has not been benefited by spinal cord decompression.

The most important factor in all these cases is a negative one, that is, the absence of any signs or symptoms referable to the supracervical neuraxis. The spinal fluid studies revealed an elevation of total protein in four of the six patients. In none was there any evidence of block. Osteoarthritic lipping associated with a narrow intervertebral space was demonstrated by roentgen examination in five patients. It is possible that more significance might be placed on roentgen demonstration of narrowed interspaces associated with osteoarthritis. It is not unlikely that the osteoarthritis might well be the result of immobility due to an intervertebral disease condition and not merely an unrelated finding as is commonly assumed.

Because of some uncertainty of diagnosis, ethyl iodophenylundecylate (pantopaque®) myelography was performed in all cases. The radiographic evidence varied from equivocal alterations in the spinal cord to alterations indicative of a moderately large mass. When the roentgenographic studies were definitive, surgical treatment was instituted without delay. However, considerable deliberation was required when the significance of the roentgenograms was debatable. In these instances the histories, clinical findings and prognoses with and without surgical treatment were carefully evaluated.

Cervical laminectomies were performed in all cases and revealed old calcified herniated disks. These were associated with osteoarthritic lipping of the adjacent vertebral margins. The cord was displaced dorsally with a V-shaped angulation clearly seen at the level of the bony lesions. In one of these patients in whom

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From the Divisions of Neuropsychiatry and Surgery of the Montefiore Hospital for Chronic Diseases.

Dr. Leo Davidoff gave his permission to include the data on one patient (B. Z.) studied by us but operated on by him at Beth Israel Hospital. Dr. Davidoff not only freed the cord but also removed some of the ruptured disk.

Adjunct attending neurosurgeon (Dr. Strully); attending neurosurgeon (Dr. Gross); associate attending in the Department of Diagnostic Roentgenology (Dr. Schwartzman); Chief of the Division of Neuropsychiatry and Professor of Clinical Neurology, Columbia University College of Physicians and Surgeons (Dr. von Storch).

[1] Stookey, B.: Compression of the Spinal Cord Due to Ventral Extradural Cervical Chondromas: Diagnosis and Surgical Treatment, Arch. Neurol. & Psychiat. **20**: 275 (Aug.) 1928. Compression of Spinal Cord and Nerve Roots by Herniation of the Nucleus Pulposus in the Cervical Region, Arch. Surg. **40**: 417 (March) 1940.

[2] Kahn, E. A.: The Role of the Dentate Ligaments in Spinal Cord Compression and the Syndrome of Lateral Sclerosis, J. Neurosurg. **4**: 191, 1947.

[3] Bucy, P. C.; Heimburger, R. F., and Oberhill, H. R.: Compression of the Cervical Spinal Cord by Herniated Intervertebral Discs, P. Neurosurg. **5**: 471, 1948.

[4] den Hartog Jager, W. A., and Moffie, D.: Medullary Syndromes Simulating Multiple Sclerosis, Amyotrophic Lateral Sclerosis, Subacute Combined Degeneration of the Cord and Syringomyelia, Caused by Herniation of the Intervertebral Cervical Disk, Folia Psychiat. Neurol. et Neurochir. neerl. **52**: 137, 1949.

the diagnosis had been syringomyelia, there was a distinct bluish midline discoloration of the cord, extending above and below the area of angulation. Palpation of this segment suggested central softening. The patient has shown some improvement following operation. Another patient showed, in addition to the angulation, a rotation of the cord backward on the left with displacement to that side caused by a calcified mass located chiefly on the left.

Surgical treatment was seriously limited by the nature of the lesions encountered. The serious damage that might have been produced in an already compromised cord in trying to remove bony material was a limiting factor. In all but one patient (B. Z.) operation was limited to decompression of the cord and section of the dentate ligaments. The latter step relieved the traction on the cord, which probably produced the symptoms in the manner described by Kahn.

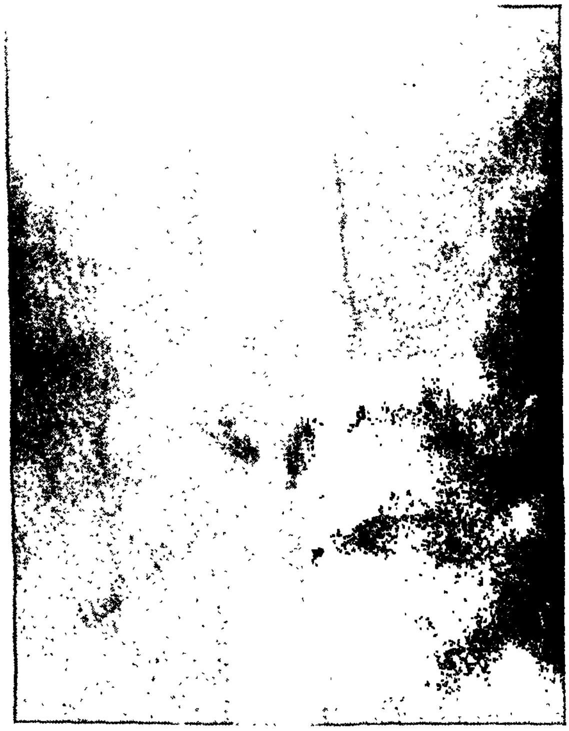

Fig. 1.—Large "hourglass" filling defect at the fifth and sixth cervical segments of the spinal cord in patient E. S.

Because of the prolonged disability before operation and the limited surgical therapy, we did not expect much improvement, but we do hope for prevention of further progress in these cases. Furthermore, the period of time that has elapsed since operation has been much too short for proper evaluation of the surgical treatment. However, we feel that four patients have shown some improvement.

Obviously, we would not be justified in stating that the clinical syndromes in these cases were entirely the result of cord compression produced by the herniated disks. The presence of the ruptured disks may have been coincidental. They may even have followed an injury caused by the basic neurogenic disorders.

It is, however, our present contention that the cord compression caused by the herniated intervertebral disks could indeed be a reasonable cause for the clinical syndromes found in these cases. This opinion is based on the observed condition of the cord at operation; the cord anatomy and mechanisms as known to us and described by Kahn; the absence of supracervical signs and symptoms; the atypical syndromes in each case; the apparent chronicity of both the clinical course and observed lesions; reports of simila. situations by others, and finally, improvement in several of our patients following operation.

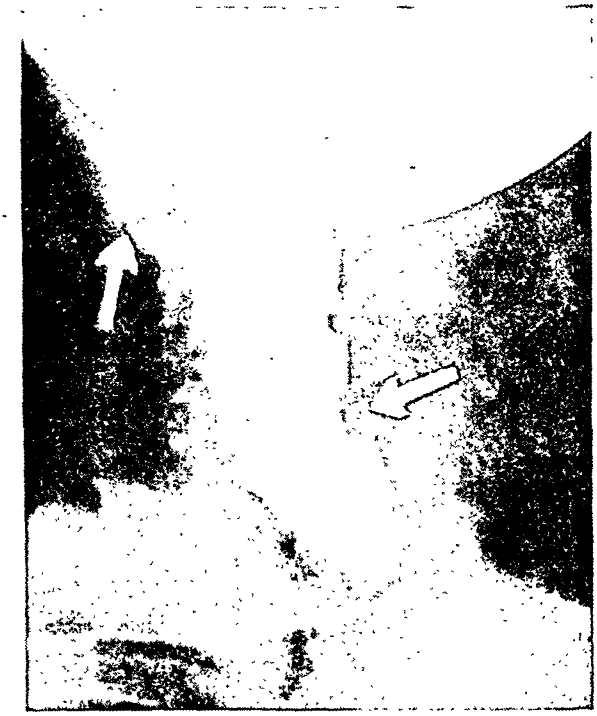

Fig. 2.—Small filling defect on the left side at the seventh cervical and first thoracic segments complicated by marked scoliosis in patient A. M.

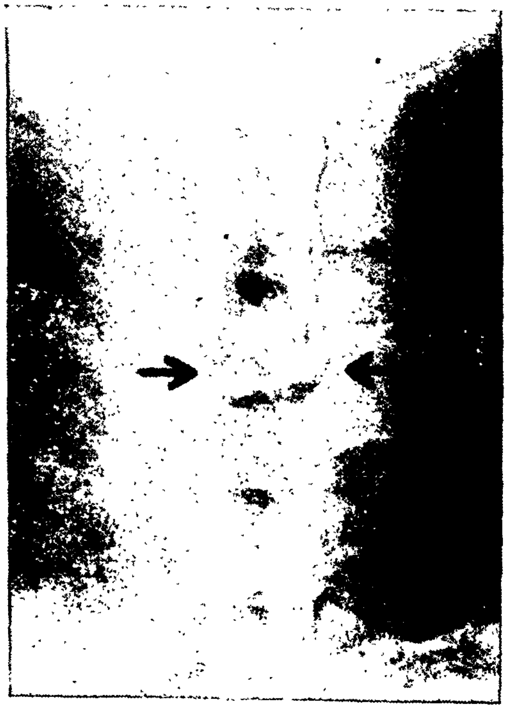

Fig. 3.—Thinning of opaque medium at fifth and sixth segments and adjacent areas in patient J R.

SUMMARY AND CONCLUSIONS

Six cases of compression of the cervical cord have been presented in order to reemphasize that the clinical syndromes caused by cervical cord compression may simulate various degenerative disorders of the spinal cord. The previous diagnoses of "degenerative cord disease," syringomyelia, multiple sclerosis, amyotrophic lateral sclerosis and combined systems disease had discouraged any active therapy. All, however, were slightly atypical syndromes. In all of the patients the course was progressive and the signs and symptoms could readily be accounted for by lesions below the foramen magnum. In four patients there was an elevation of total protein in the spinal fluid. In five, there was osteoarthritic lipping and a narrow intervertebral space at the level of the lesion. In five, ethyl iodophenylundecylate myelography of the cervical region of the spinal cord revealed a moderate or minimal defect at the level of the lesion. In all six patients the pathological process was a calcified, herniated intervertebral disk, associated with osteoarthritic lipping in such fashion as to produce a definite compression and angulation of the cord. Because of the nature of the lesions, surgical intervention was in all but one case (B. Z.) limited to freeing the cord by section of the dentate ligaments. It is much too early to report the final results of operation in these cases. Nevertheless, some improvement has already been evidenced in four patients even at this early date, from three to seven months after operation.

EYE EMERGENCIES IN INDUSTRY

FIRST AID TREATMENT BY THE PHYSICIAN

Arthur Alexander Knapp, M.D., New York

Eye emergencies in industry have assumed a tremendous importance because of their number and their cost to management and labor. It is far better to prevent than to treat these emergencies, but this paper is concerned with those unavoidable accidents that already have occurred. In these instances proper first aid treatment by the attending physician will save millions of dollars and thousands of man hours and prevent irreparable mental and physical injury to the injured person.

Before discussing the actual accident, it is pertinent to recall certain physical characteristics of the eye area which aid in the prevention of damage to the eye itself. The strong bony orbit encases the soft globe and provides a great deal of protection. Witness the frequency with which a prize fighter is struck in the eye but how seldom there is injury to it. Other protective features besides this bony encasement, which usually preserve the eye in a contusion of this type, include the large pad of fat directly behind the globe, the ligaments and muscles surrounding the eye and the intrinsically resilient eyeball—all of which serve as a mattress to cushion and absorb any traumatism transmitted to them. The corneal reflex, too, reduces the harmful effects of contact violence to the underlying structures, but additionally, it prevents foreign bodies from flying into the eye. This reflex, when active, serves admirably. Unfortunately, however, many people do not possess the standardized normal reflex. They have a hypoaesthesia of the cornea, a partial to complete anaesthesia of the corneal branch of the fifth nerve, with a resultant slow reflex. They often get foreign bodies in their eyes. Unless there are other concomitant findings, I do not consider this poor reflex to be pathological. Nevertheless, when present, it does decrease the defenses of the eye. The eyebrows and eyelashes also help to keep foreign bodies out of the eye. Anteriorly, however, the globe on the temporal side is more exposed; therefore, it is in this area that it is particularly vulnerable to injury by both small and large objects. Actually we do find more of the results of traumatism in this region. In the presence of an injury to the eyeball itself, there is still another basic protection to sight, that protection afforded to the most delicate tissues of the visual apparatus, the retina and optic nerve. Anatomically, the retina and optic nerve are so situated as to be the most shielded structures of the eye. Every other part of the eye and the orbit protects them.

The following statistics give an average percentage of the types of accidents to the eye which may be expected in industry: flying bodies, 80 per cent; tools or parts of machinery, 8 per cent; splashing liquids, 7 per cent; explosions, 2.5 per cent; falls, 2 per cent, and infections, 0.5 per cent. Once an injury to the eyeball proper has occurred, without its destruction, particular attention must be given to the ciliary body, that part of the uvea or middle coat of the eye which joins the iris to the choroid. The ciliary body is the great danger zone. It is trauma to the ciliary body, more than to any other part of the globe, which may give rise to sympathetic ophthalmia and the loss of both eyes.

Ocular emergencies may involve the globe, its adnexa or both. Correct and immediate attention is indispensable to an uneventful recovery. Without delay, one must try to prevent or control potential body infection, so frequently brought in by the destructive agent. The same surgical care that would be employed elsewhere must be given a wound about the eye, perhaps with a little more gentleness. Systemic antibiotic or other therapy may be administered as the occasion warrants. With all eye injuries the psychogenic factor demands much attention, for the emotional disturbance is usually out of all proportion to the damage. Therefore the patient must be calmed, set at ease at once and given a sedative immediately.

Lecture given at School of Public Health, Columbia University, under the auspices of Commandant Third Naval District and Columbia University on Sept. 22, 1949. Dr. Knapp holds rank of Captain (MC), U. S. N. R. and is Impartial Eye Specialist to the Workmen's Compensation Board, New York State.

EMERGENCIES INVOLVING THE ADNEXA OF THE EYE

Industrially, these medical emergencies include (1) ultraviolet burns; (2) chemical burns; (3) foreign bodies; (4) wounds, and (5) allergies.

Ultraviolet Burns.—Ultraviolet radiation from the sun or from one of the different lamps in use frequently causes ultraviolet burns of the eyelid skin. As a rule, the burn is part of a more generalized one involving the body. Emergency treatment is the same as that for burns elsewhere. The globe itself may be ignored so far as any application to the skin of the lids is concerned but it is well not to permit any of the applied medication to get into the eye. If it does irrigate immediately with water, normal saline or boric acid solution. A drop of butacaine (butyn®) sulfate, tetracaine (pontocaine®) hydrochloride or other local eye anaesthetic will take care of any ocular discomfort.

Chemical Burns.—Direct treatment of a chemical burn, however, differs somewhat from the treatment of the ultraviolet burn. The chemical burn may be much more severe. Here we are dealing with an embedded foreign chemical, some of which may be removed mechanically and/or washed out directly after the accident. Therefore, as soon as possible following the injury the area should be flushed with water continuously for many minutes or the patient's head immersed in a pail of water. That type of burn treatment which has been found effective in other areas of the body should be continued. In a deeper burn of either or both lids it is a good plan to have an ophthalmologist see the patient soon after the injury, so that contractions might be prevented or an early graft might be done. Some burns can distort a person's face so as to make him a physical as well as a mental cripple for life. No late plastic repair, no matter how expert, can match immediate optimum therapy.

Foreign Bodies.—Extraocular foreign bodies per se and/or the accompanying psychogenic factors call for emergent therapy. When the foreign bodies are on the surface of the skin they can merely be brushed off. But when they are subcutaneous, they should be extracted through the original wound or through an overlying incision. A frequently observed subcutaneous foreign body of the eyelids is that seen in coal miners. A small chip of coal penetrates the surface and becomes embedded just below it, giving the appearance of a blue object rather than a black one. This blueness is seen because of the same physical phenomenon which produces the blue color in the wrist vein and in the blue iris. The explanation is that any opaque material covered by a more or less transparent tissue appears blue. Overseas I have seen a number of men with subcutaneous gun powder foreign bodies, the result of being shot at close range. The powder was black, but it appeared blue through the skin. In cases of this type the powder can be removed readily by making use of a small sharp scalpel. As a rule, no scarring results. Different foreign bodies may be lodged in the deep lid structures or in other tissues surrounding the globe. Should the wound of entrance be evident and the removal of the foreign body apparently presents no hazard, a forceps or other instrument may be used to extract it. In the event that there is a danger, it is usually inadvisable to attempt its withdrawal because a foreign body in the orbit but outside of the globe generally is well borne. Rarely a bullet or other foreign missile may cause a double perforation of the globe and then come to rest behind it; unless it can be simply removed, let nature encapsulate it. Manipulation in this area may give rise to infection any type of which could be serious because of potential meningitis.

Wounds.—There are times when a patient will present himself with an open wound of the orbit, not involving the eyeball. The wound may be an incised or a lacerated one. Immediate cleansing, application of an antibiotic and covering it with a moist sterile gauze pad is good treatment if an oculist is available within a matter of hours. An antibiotic and tetanus antitoxin may be administered in the meantime. If the specialist is not available, in order to avoid healing by secondary intention with its consequent disfigurement, direct careful suturing is indicated. When skin alone is involved twisted silk may be used, if promptly procured, but in deeper wounds, the deep structures should be sutured with catgut and the skin closed with silk. In the repair of these wounds one should always try for an overcorrection and employ enough sutures to give fine coaptation of the wound edges, along the lines of cleavage when possible. Otherwise, lid deformities may develop. In the way of further treatment, the sutures may be removed at any time after 48 hours whenever the wound is sufficiently well healed. Fundamentally, the closure for an incised or a lacerated wound is similar. Given a multiple lacerated wound, however, treatment depends on whether the upper or the lower lid is involved. In the repair of the skin of the upper lid, surprisingly enough, most of it may be sacrificed because of the excellent and rapid regeneration; but to restore the lower lid, unfortunately, this rule does not hold since only a small area of the skin can be lost without creating a greater deformity—cicatricial ectropion. Therefore, as much lower lid skin as possible should be preserved. A firm dressing should always be applied for at least two days. It is comforting to know that no matter how unsatisfactory the suture line may appear, rarely is a scar of the eyelids visible when healing is by first intention along the cleavage lines. Thus, the indicated treatment for extraocular emergencies is seen to be comparatively simple, and yet these simple procedures may well serve to save many a person great future anxiety and disfigurement. Both the gain of dollars and the thousands of man hours to industry are added advantages.

EYE EMERGENCIES INVOLVING THE EYEBALL

Similar types of emergencies arise for the eye proper, and similar principles of treatment prevail. Since specific therapy will differ somewhat, the particular treatment for each condition will be outlined.

Ultraviolet Burns.—A patient may complain of an ultraviolet burn of the globe caused by a welding light flash, the sun or a sun lamp. A flash burn is the most frequent eye emergency in a welding industry. Several hours after the exposure, marked photophobia and blepharospasm develop. Pain comes on and it can be very severe, chiefly due to iris spasm. An anesthetic eye ointment instilled into the conjunctival sac every two hours, up to several doses, generally will give the necessary relief. Personally, I prefer also to instil epinephrine and homatropine hydrochloride. At the New York Navy Yard during the last war there were many flash burns of the eye all of which were treated in this fashion with quick and complete cure. For additional relief iced boric compresses, 15 minutes four times a day, may be prescribed.

Chemical Burns.—Chemical burns of the eye deserve the same treatment as that just described. Also, any of the chemical present should be removed mechanically and the eye flushed zealously for a long period of time. This should be carried on with water, more water and more water. A mild anesthetic should be instilled, 1 per cent atropine, and an antiseptic ointment. Penicillin or one of the other newer antibiotics may be substituted for the antiseptic ointment. For increased healing follow with cod liver oil drops, 1 drop four times daily. An antibiotic may be injected intramuscularly. Chemical burns of the eye reveal their greatest damage days after the original accident, in some cases they become so serious that they cause atrophy of the globe, with subsequent enucleation. At Sing Sing Prison Hospital during the last 17 years I have seen a number of these serious late chemical burns of the eye. While they usually were not industrial in origin, the chemical and its effects are the same as in industry. Principally these accidents were observed in the Negro inmates as an aftermath of a love affair, a jealous woman scorned having thrown lye into the eye of her unfaithful lover. The corneal reflex in these persons either was not sufficiently active to prevent the lye from entering the eyeball, or the lid reflex of amazement, that startled wide eyed expression, superseded the corneal reflex in these persons. Once in the eye, the chemical was most destructive. Many developed atrophic globes and/or had their eyes enucleated. A few lucky ones got by with synechiae, that is, adhesions between the eyeball and the eyelids. To prevent these disturbing adhesions between the eyelids and the eyeball a conformer may be inserted shortly after the damage. This is a thin piece of glass or plastic, conforming to the front surface of the eyeball; it is slipped in between the eyelids and globe to separate the raw surfaces until epithelialization has taken place, after which time it is removed.

Parenthetically, it is interesting to note that some persons after a chemical burn of the eye exhibit a central corneal opacity; an opacity which may or may not be blinding. Interference with vision depends upon the extent and depth of the opacity. If it completely occludes the cornea or the pupillary area, it is blinding. On the other hand, if it only partially occludes the pupil, then so called normal vision, 20/20, can still be expected. Other industrial mishaps terminate in similar scars. In all of these instances I have obtained excellent results with simple corneal tattooing, alone or in combination with optical iridectomy.[1] When the opacity only partially invades the pupillary zone, tattooing gives a good result cosmetically, and at the same time will improve the acuity. In every case of incomplete corneal opacity entirely occluding the pupillary area and causing sufficient industrial blindness, I regularly advise optical iridectomy with tattooing rather than the less successful corneal graft.

Foreign Bodies.—With regard to foreign bodies, it is interesting to note that in mechanical industries more foreign bodies fly into the left than into the right eye. This is explained by the fact that most people are right handed and that the angle of incidence equals the angle of reflection; that is, the angle of a hammer at work equals the angle at which a chipped foreign body will fly into the left eye. Foreign bodies on the eyeball may be removed after instillation of a local anesthetic and light brushing with an applicator dipped in an antiseptic solution. Often enough even the light brush is unnecessary since the mere instillation of drops will wash away the foreign body. An antiseptic ointment may be placed in the conjunctival sac. If the foreign body is nonmetallic, as a rule no further treatment is indicated; but if it is metallic, one should check for the presence of a rust ring with a magnifying glass. Should rust be present, removal should be attempted by gently curetting it; if the operator is sufficiently adept, a dental bur may be used. It may be necessary to curette a rust ring two or three times before it is completely removed. The eye should be kept under anesthesia during all corneal surgery. In a recent report [2] I showed that it is unnecessary after the removal of an embedded corneal foreign body to cover or bandage the eye. Healing is not interfered with. Instillation of an anesthetic eye ointment will permit the patient to return to work and continue with binocular vision. When a small subconjunctival hemorrhage follows an accident, one should look for a foreign body, cautiously probe for one. The eye should be checked with the ophthalmoscope and a roentgenogram ordered, for rarely a foreign body may perforate the globe and give no symptoms whatever, the perforation not even being revealed by examination with magnification. A foreign body within the eyeball generally requires highly specialized care. It is always potentially disastrous and its removal fraught with danger. It is to be remembered, too, that a capsule quickly envelops the foreign body and that this capsule sets up tremendous magnetic resistance. Therefore, intraocular foreign bodies should be regarded as emergencies. Whenever the site of entrance is visible, a magnet should be applied to that spot without delay, in the hope that the body is metallic and magnetic. If an electromagnet is employed place all watches in another room before turning on the current. In the event that the magnet does attract a metallic sliver, the operator as well as the patient will have a deep sense of satisfaction. Blindness will have been prevented.

Wounds.—Contused wounds of the globe most frequently do not give rise to permanent damage. Recall the many contused wounds of the globe without even a "black eye." When a black eye does develop, there are rarely more serious intraocular disorders present. Subconjunctival hemorrhage heals in 10 to 14 days and only derives importance from its appearance. Compresses and astringent drops will favor its absorption. There is seldom further damage, such as rupture of the sphincter muscle of the iris, edema of the macula, retinal hemorrhage or detachment or a choroidal tear. A patient with a severely contused wound may be put to bed for 24 hours and a drop of 1 per cent atropine sulfate solution instilled into the injured eye. After 24 hours, if there are no subjective or objective morbid effects, the patient should be permitted his normal routine.

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[1] Knapp, A. A.: Corneal Graft or Tattooing with Iridectomy? U. S. Nav. M. Bull. 42: 1366-1369, 1944.

[2] Knapp, A. A.: After-Care of Corneal Foreign Bodies, J. A. M. A. 132: 809 (Nov. 30) 1946.

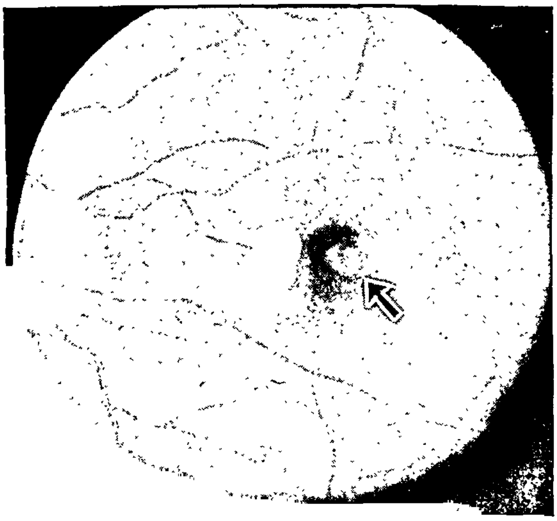

Fig. 1.—Hole in macula showing destruction of inner layers of retina with 20/60 vision.

Though of infrequent occurrence, a case in point is interesting: (1) to demonstrate that partial industrial blindness due to traumatic chorioretinitis may be entirely cured with the return of normal or 20/20 vision and (2) to display another effect of a contusion. Figure 1 is a photograph of a kodachrome slide of the right fundus oculi of an automobile mechanic who suffered a contused wound of the globe. Apart from the manifest mild external trauma, an incomplete hole in the macula developed with the loss of some of the inner retinal layers and an active central chorioretinitis. There was a partial loss of vision: 20/60. Figure 2 represents the same fundus oculi after the indicated treatment. Absolute regeneration of the retina has taken place with no scarring. Actually it is a complete cure with the return of 20/20 vision. Similar retinal regeneration and actual cure may occur in cases of complete industrial blindness due to trauma or disease in which instances vision may be remarkably improved from 20/200 or even less, to the normal 20/20.[3]

Incised or lacerated wounds of the conjunctiva ordinarily may be sutured or left gaping since the membrane possesses tremendous reparative power. An antiseptic ointment should be applied and the eye covered for 24 to 48 hours, after which period there will be splendid healing. Nonperforating incised and lacerated wounds of the cornea and sclera are treated palliatively. Without complication, rest, atropine, antiseptic ointment and compresses are all that are necessary. Prophylactically, give an antibiotic.

Perforation of the globe regularly is considered dangerous, not only because of potential blindness in the affected eye but also because of the possible onset of sympathetic ophthalmia in the fellow eye. If an oculist is available, he should be called. Should you temporarily be on your own, don't hesitate, but place the patient at absolute rest, instil a liquid anesthetic followed by atropine and cleanse the wound carefully. Next, drops of an ophthalmic antibiotic solution may be given and both globes loosely covered, for if one eye remains free the patient surely will use it and motility of this eyeball necessarily means motility of the injured one, a decided contraindication. Administer penicillin intramuscularly or administer some other antibiotic and tetanus antitoxin if indicated. With the patient's eyes at rest, one may wait for hours, in some cases even for days, for the specialist. Above all, do not disturb the patient, not even to remove his clothing. In the event that you alone are obliged to carry on, then before dressing the eye, most gingerly retract the lids with or without an instrument, guarding against the slightest pressure and inspect the wound for any herniation of the contents of the globe. If a hernia is present, grasp the mass with a small forceps, put exceedingly mild traction on it and excise it flush with the eyeball. Then proceed as above.

Contrary to current opinion I have not seen sympathetic ophthalmia arise following the immediate and clean excision of portions of the ciliary body after perforated wounds in that area. An illustrative and somewhat unusual case of a perforated wound in the danger zone, the ciliary body region, may be cited: a bird bite of the eye at the New York World's Fair. While lifting a fish heron, a large bird, off the floor for transportation to the New York Zoo, the zoo director, believing that a bird off balance could not strike, was surprisingly bitten in his right eye. Without delay the ambulance rushed him to my office. Examination revealed an irregular perforation of the eyeball over the ciliary body with a prolapse of part of the body. In the hospital, the herniated mass was excised, the patient made a good recov-

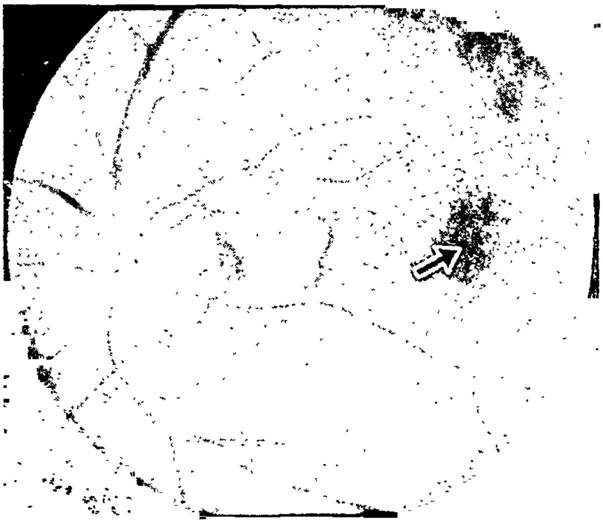

Fig. 2.—Macula after therapy revealing complete regeneration of the retina with 20/20 vision.

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[3] Knapp, A. A.: Los motivos universales de la ceguera y su tratamiento, América clín. 16: 218-222, 1950.

ery, and no sympathetic ophthalmia developed. Two points may be stressed. First, no matter how hopeless a perforated globe may first appear, do not enucleate it. Injured eyes may change radically in 24 hours. Second, since sympathetic ophthalmia never occurs within one week and practically never within two, palliative therapy may be continued for at least two weeks, provided that healing is progressive. However, after a week has elapsed and the eye remains blind and healing is unsatisfactory, enucleation should be carried out.

ALLERGIES

Sometimes an employee or a bluejacket will seek care for an apparent emergency of the eye. There will be marked swelling and redness of the lids and/or globe along with photophobia, itching and a slight stringy discharge of the conjunctiva. The patient will be much concerned over its seriousness. In all probability, he will be completely unaware of its allergic basis. He may give you a history of direct allergy to a certain substance but, most frequently, it will take a little questioning before any suspicion of allergy arises. Nevertheless, the diagnosis of ocular allergy is usually easy. The points of distinction are these: the abrupt appearance and disappearance of symptoms, sometimes traced to the exciting agent, the withdrawal of which proves curative; the presence of eosinophiles; the negative bacteriologic findings; the frequent association with other allergic phenomena; the demonstration of positive sensitization tests and immediate temporary relief afforded by epinephrine or ephedrine. Pathognomonically, in allergic conjunctivitis there will be a stringy or rubbery discharge which commonly is recovered at the medial canthi, occasionally over the surface of the conjunctiva. Often, part of the discharge becomes attached to the applicator while the remainder adheres to the eye until enough traction is developed to pull it away from the globe. As the rest of the discharge separates, it snaps up to the applicator.

Most of the ocular allergies are part and parcel of a more generalized susceptibility, although clinically the allergy may be confined solely to the eyes. In extraordinary cases, the patient will be obliged to seek other employment. While this appears logical, I have never had a patient under my care who had been obliged to make a change. Palliative local therapy is secondary to systemic therapy. Locally there is but little to be done. Classically, in the case of a known allergen—rare indeed considering the many patients seen—have the person avoid contact. In the inflammatory stage about the eye the use of water on the allergic skin should be restricted; the skin of the lids and/or conjunctiva painted with silver nitrate solution and a zinc oxide ointment for the skin prescribed. Oral administration of sufficient vitamin D and sufficient calcium is the treatment of choice.[4] Until this medication takes effect, as a rule within three weeks, palliative eye drops and/or an eye wash may be employed. No other therapy has given comparable results. There is both subjective and objective improvement. Practically every person gets decided relief.

COMMENT

In closing, it might be mentioned that every industrial physician will have emergencies due to extraneous causes, nonindustrial. Seldom will these emergencies require emergent treatment by him; rather, they can be delegated to the care of the nonindustrial private practitioner.

907 Fifth Avenue at 72nd Street.

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PLASMA L. E. TEST IN SYSTEMIC LUPUS ERYTHEMATOSUS

STUDY OF TWENTY-THREE PATIENTS WITH POSITIVE L. E. TESTS

John R. Haserick, M.D., Cleveland

The original intention of this study was to evaluate the plasma L. E. test[1] as a diagnostic measure in acute disseminated lupus erythematosus. As it proceeded, patients with classic examples of the disease were found to have consistently positive tests. However, the plasma L. E. test was found also to be positive in less fulminating cases, many of which presented clinical histories which were not typical for acute disseminated lupus erythematosus. For example, unusual combinations of diseases such as rheumatoid arthritis and epilepsy were noted in some patients with positive plasma L. E. tests.

These clinical variations from the typical conception of acute disseminated lupus erythematosus suggested two important possibilities: first, that the plasma L. E. test is positive in diseases other than acute disseminated lupus erythematosus, i. e., that false positive L. E. tests can occur, and/or, second, that acute disseminated lupus erythematosus is actually a frequent, protean disease with atypical phases which may be detected with certainty by the plasma L. E. Test.

In this report an attempt is made to answer these questions as the result of a study of the clinical and laboratory data concerning the first 23 patients who showed positive plasma L. E. tests at the Cleveland Clinic.

HISTORY OF PLASMA L. E. TEST

Hargraves, Richmond and Morton[2] first observed the L. E. phenomenon, i. e., rosettes of clumped leukocytes and L. E. cells, in the bone marrow of patients with systemic lupus erythematosus. Their observation was cor-

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This article has been abbreviated for publication in THE JOURNAL by omission of tables 2 and 3. These will appear in the author's reprints.

Read before the Section on Dermatology and Syphilology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

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roborated by Haserick and Sundberg,[3] who indicated the value of this procedure as a diagnostic test for the disease. However, further experience with the use of the patient's own marrow revealed two difficulties: first, the marrow was often hypoplastic and gave a false negative result, and, second, the procedure often was tolerated poorly by an extremely ill patient.

An L. E. test aimed at overcoming these disadvantages was developed at the Cleveland Clinic and submitted for publication on March 25, 1949.[4] Almost simultaneously, Hargraves reported similar results.[5] In these tests the plasma of the patient suspected of having systemic lupus erythematosus is mixed with the bone marrow cells from another person: the L. E. phenomenon occurs exactly as if the patient's own marrow had been used. This plasma L. E. test has been improved by the use of dog bone marrow, in accordance with a suggestion by Sundberg,[6] and by the use of the concentrated cell layer of peripheral blood as suggested by Moffatt, Barnes and Weiss.[7] The last-mentioned technic has the advantage of simplicity and may be carried out as an office procedure, but in my experience the results have been somewhat inconsistent, although a positive test is significant.

In addition to its value in diagnosis, the plasma L. E. test has provided a useful procedure for the investigation of systemic lupus erythematosus. Through its use the factor in the blood which induces the L. E. phenomenon in the marrow or peripheral blood cells has been found to be in the gamma globulin fraction.[8] With the use of lupus erythematosus gamma globulin as an antigen, antibodies which precipitated the L. E. factor [9] have been developed in rabbits. Antibodies against normal gamma globulin failed to precipitate the L. E. factor from lupus erythematosus plasma or plasma fraction. These observations indicate an immunologic difference between the L. E. factor and normal gamma globulin.

TECHNIC OF PLASMA L. E. TEST

Bone Marrow as Indicator.—At the Cleveland Clinic heparinized dog bone marrow is supplied by the research division at weekly intervals. Under ordinary refrigeration the dog marrows remain valuable as test material for eight to 10 days. The same holds true for human bone marrow obtained on routine aspirations.

The suspected lupus erythematosus plasma, 0.5 cc., is added to 1 cc. of heparinized bone marrow in a paraffined tube. The mixture is agitated slowly for one-half hour and is placed in a hematoc[illegible] at 1,000 r. p. m. for five minutes [illegible], smeared and stained with Wright's [illegible] ukocytes and/or L. E. cells indicate a positive test. Rosettes of leukocytes alone indicate a positive test when dog marrow is used, for L. E. cells are rarely found in such preparations (figure).

Peripheral Blood as Indicator.—Concentrated peripheral blood cells may be substituted for bone marrow and the mixing carried out in a watch crystal, or one may use the method of Moffatt, Barnes, and Weiss,[7] in which equal parts of suspected lupus erythematosus blood are mixed with peripheral blood, spun down and the buffy coat examined for the L. E. phenomenon.

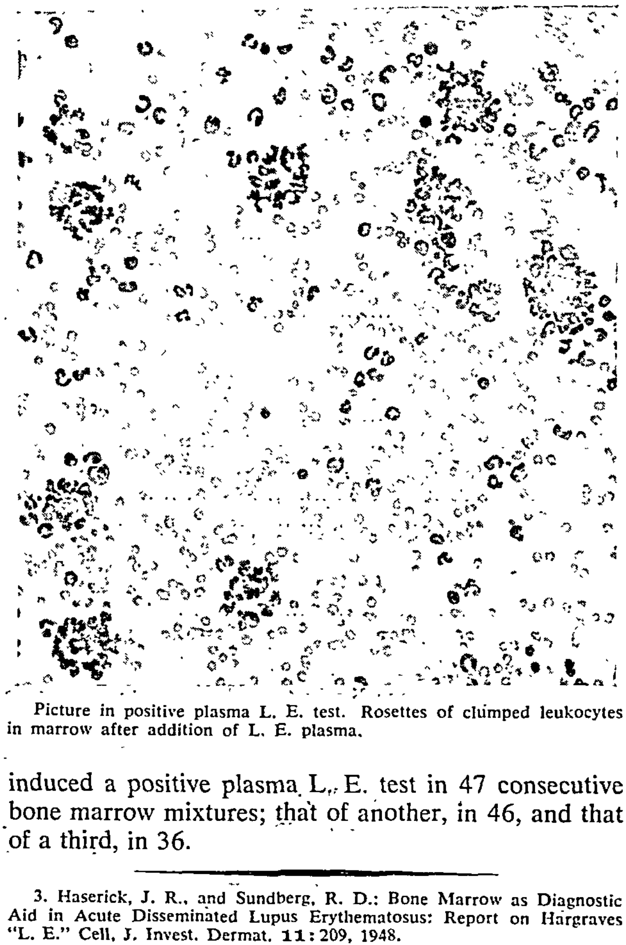
Recently [10] we have found that the method originally described by Sundberg and Lick [11] for using the patient's own peripheral blood can be improved by remixing the patient's own plasma with the cells. This procedure has the effect of bringing the L. E. factor into better contact with concentrated peripheral blood cells and has provided a more simplified and yet consistent L. E. test.

Controls are prepared from the marrow or peripheral blood cells without the addition of L. E. plasma, a comparison thus being permitted when the leukocytic clumping is in doubt.

DISEASES TESTED

Since February 1949, 1,500 preparations have been studied at the Cleveland Clinic and 122 patients have been tested. Diseases in which negative results were obtained are listed in table 1. The patients were tested because their condition showed clinical similarities to systemic lupus erythematosus or because of the presence of leukopenia, elevated gamma globulin or an increased sedimentation rate. Several preparations were made in each instance, but the results were consistently negative.

The L. E. test was positive in 27 patients, 17 of whom were admitted to the Cleveland Clinic Hospital. The plasma of one patient with systemic lupus erythematosus induced a positive plasma L. E. test in 47 consecutive bone marrow mixtures; that of another, in 46, and that of a third, in 36.



Picture in positive plasma L. E. test. Rosettes of clumped leukocytes in marrow after addition of L. E. plasma.

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CLINICAL DATA AND THE L. E. TEST

Diagnoses Before the L. E. Tests.—Seven of the 23 patients who had positive plasma L. E. tests were diagnosed as having acute or subacute disseminated lupus erythematosus before the test was performed. Of the remaining patients 11 had rheumatoid arthritis; 3, rheumatic fever; 1, acute glomerulonephritis, and 1, chronic glomerulonephritis. In almost every case of the latter group the diagnosis was regarded as unsettled and the plasma L. E. test was ordered by the clinician because systemic lupus erythematosus was a possibility.

Syphilis.—Five patients had been treated for syphilis because of positive although low titer serologic tests. Four of the five patients gave no history of primary or secondary lesions, and the spinal fluid examinations were negative. The patients had received antisyphilis treatment for one to six years before the L. E. test was performed. In each case (except the one with specific lesions) the complement fixation tests were negative and the flocculation tests (Kahn) were positive although also of low titer. It seems likely that the atypical serologic tests for syphilis in four of the five patients were false positive reactions occurring because of unrecognized systemic lupus erythematosus.

TABLE 1.—*Conditions with Negative Plasma L. E. Test*

Condition	Number of Patients
Rheumatoid arthritis	13
Chronic discoid lupus erythematosus	7
Systemic lupus erythematosus in remission (of 8)	3
Erythema multiforme	3
Scleroderma	3
Senear-Usher syndrome	3
Multiple myeloma	3
Periarteritis nodosa	2
Cirrhosis	2
Rheumatoid fever	2
Dermatomyositis	2
Normal	2
Miscellaneous (including encephaliti	53
Total	95

Skin Manifestations.—Seven patients had facial eruptions typical of lupus erythematosus at the time of the positive L. E. test. Sixteen evidenced no skin changes at the time of the L. E. test, although six of these patients later manifested typical dermatological pictures. One patient acquired a "butterfly" eruption during a relapse following cortisone treatment.

Mortality and Classification.—Eleven patients died subsequent to the positive L. E. test; six of these had been classified as having acute and five as having subacute cases of disseminated lupus erythematosus. Of the remainder, three patients with acute and nine with subacute cases had varying degrees of remission. The plasma L. E. test reverted to negative in three of the 12 patients who had a remission.

Convulsions.—Six of the 23 patients had convulsions of the grand mal type during the course of the illness. One 32 year old patient had been diagnosed as havi had epilepsy since the age of 13 because of repeated pr menstrual convulsions. Another patient, 39 years ol had had epilepsy for 15 years. Four patients had gran mal attacks during the progress of the disease. Co vulsions in the terminal stages are not reported in th study.

Miscellaneous.—Fever was present in all 23 patien In 18 the temperature had exceeded 102 F. The ag were from 17 to 62 years. The patients were all wom except one. A history of ascites or pericardial or pleu effusion was noted in nine patients.

A prolonged course with relatively infrequent exac bations was observed in eight patients. Although the persons were considered to have partial remissions th were not well but not acutely ill, still unable to purs normal active lives. One patient presented unconvinci evidence for systemic lupus erythematosus. This patie had only occasional periods of high fever, anemia a leukopenia. The positive L. E. test and the hand erupti favored the diagnosis of systemic lupus erythemato instead of rheumatoid arthritis. In view of the negati L. E. tests in other patients with severer and more typi rheumatoid arthritis, this patient was included with t systemic lupus erythematosus group.

Convincing proof for systemic lupus erythemato was noted during a relapse after cortisone administ tion in one patient who for years had been conside an epileptic with atypical rheumatoid arthritis. The s was free from eruption, and the main support for t diagnosis of systemic lupus erythematosus was the po tive plasma L. E. test and other clinical and laborat data. After cortisone had been given for three wee a pronounced clinical and laboratory response result On the fourth day after treatment with the drug w stopped a distinct "butterfly" erythema appeared on t face associated with pronounced systemic symptoms i cluding, for the first time, a temperature of 104 F. Aft several days the eruption disappeared and the conditi returned to a state of incomplete remission. The plasm L. E. test remained positive throughout the entire peri of observation.

LABORATORY DATA

The laboratory data of special interest and relation the L. E. test are emphasized.

Sedimentation Rate.—With the method of Rour and Ernstene the sedimentation rate was found to elevated in all patients with systemic lupus erythem tosus admitted to the Cleveland Clinic Hospital. In o patient the reading showed moderate elevation to 0. mm. per minute (normal, 0.45), but in all others t reading varied between 1.0 and 2.3 mm. per minut There was no relationship between sedimentation ra and mortality; the patient with one of the lowest se mentation rate determinations (0.82) died on the thi hospital day, while the patient with the highest readi (2.3) is now without symptoms of the disease. Duri remissions the sedimentation rate reverted to normal before the L. E. test changed in some patients.

Renal Function.—Abnormal results of urinalysis were noted in all but one of the patients who died. Seventeen patients showed varying degrees of albuminuria.

Plasma Proteins.—Using the Longsworth modification of the Tiselius electrophoretic technic, Dr. Lena A. Lewis (of the research division) carried out separations on the plasma of 13 patients. While the gamma globulin was elevated in most cases, the alpha and beta globulin fractions often were elevated to a higher relative proportion than was the gamma globulin. The lowest gamma globulin determination was noted in the patient whose L. E. test was negative on admission.

Plasma L. E. Test.—The L. E. test was positive in all patients with systemic lupus erythematosus. Certain variations were observed according to the number of rosettes of clumped leukocytes per high power field. When human marrow was used as the indicator the number of L. E. cells was used also in rating the degree of positivity of the test. The higher the number of clumped leukocytes or L. E. cells, the more convincingly positive the test was considered.

As the condition improved, the number of cells diminished. The first change apparent in the human bone marrow preparations was absence of L. E. cells. With greater clinical improvement, the leukocytic clumping also disappeared. During remissions in three patients the L. E. test became negative. In one of these the remission followed cortisone treatment. In another patient the plasma L. E. test again became positive during a relapse.

Eight patients with chronic discoid lupus erythematosus had negative L. E. tests, as did a 15 year old boy with chronic disseminated lupus erythematosus.

In one patient with classic acute disseminated lupus erythematosus the L. E. test was negative on admission but became positive on the eighth hospital day. Because this was the only negative reaction in the group, the following details are given. The patient was at the point of death on admission. The blood urea was 231 mg. per 100 cc., and the temperature, 102.4 F. Ascites, pulmonary and ankle edema and the classic dermatological eruption of lupus erythematosus were present. Cortisone therapy was initiated, and improvement was noted in all clinical and laboratory aspects. On the eighth hospital day the plasma L. E. test was positive for the first time and the blood urea 92 mm. per 100 cc. In two weeks the urea clearance improved from 37 to 90 per cent of normal. In vitro addition of urea to a level of 303 mm. per 100 cc. in the plasma failed to inhibit the phenomenon. The Tiselius pattern revealed a low albumin and gamma globulin, a definitely high alpha globulin and fibrinogen and a normal beta globulin determination. The patient had high proteinuria. The low content of the L. E. factor observed in this plasma may be analogous to the low complement content in nephrosis, which has been shown by Seifter and Ecker [12] to be related to the loss of gamma globulin in the urine. Thus, the low gamma globulin level seems the most credible explanation for the negative L. E. test on admission.

The following case of systemic lupus erythematosus illustrated several features which deserve emphasis: insidious onset over a period of several years as benign-appearing osteoarthritis, false positive serologic tests for syphilis, grand mal convulsions, polyserositis, positive plasma L. E. test and final progression into severe, critical systemic lupus erythematosus.

REPORT OF A CASE

History.—A woman aged 41 was first seen at the Cleveland Clinic on May 2, 1947. During the preceding December, after an attack of "flu," she had noted the onset of malaise, aching of the back, arms and legs, chilliness and easy fatigability. Stiffness developed in the shoulders, elbows, knees, ankles and fingers. While worse in the morning, the condition improved with exercise. Occasional swelling of the fingers was noted. There was no accompanying fever at the onset.

Past history revealed that the patient had received injections in the hip for several months. A diagnosis of latent syphilis had been made although there had been no record of syphilitic lesions. Except for the occurrence of arthritis, in 1938, the remainder of the history was noncontributory.

Physical Examination.—The temperature was 99.2 F. The pulse rate was 104 per minute. The blood pressure was 138/86. The patient appeared well developed but obese and not acutely ill. There was no limitation in motion of the joints and no swelling. The medial side of the right knee was tender; the skin, clear. The remainder of the initial general examination revealed a normal condition.

Laboratory Data.—The routine laboratory studies taken on the first examination revealed 12 Gm. of hemoglobin per 100 cc., 4,350,000 red blood cells and 1,900 white blood cells. The sedimentation rate was increased to 1.5 mm. per minute (normal, 0.45 mm.). Blood sugar and uric acid determinations were normal. The Wassermann reaction was negative, while the Kahn reaction was 2 +. Results of a spinal fluid examination were normal. The routine urinalysis showed the specific gravity to be 1.017 and the pH, 6. The reaction for albumin was 2 +, but no cells or sugar were present.

The diagnoses were osteoarthritis and latent syphilis.

Course.—The patient continued to have stiffness and occasional swelling of the joints; general malaise, weakness and fatigue persisted. In 1949 she began to have grand mal convulsive seizures. She became progressively weaker and lost 30 pounds (14 Kg.) in weight. The illness gradually became severer, and the patient was admitted to another hospital, where pleural and pericardial effusions were found. The amount of hemoglobin dropped to 3 Gm. per 100 cc. A plasma L. E. test was positive on March 25, 1950, and repeated blood transfusions had little effect on the hemoglobin level until cortisone therapy was started. At this time the critical aspect of the condition abated and the patient entered a definite remission.

Summary.—This patient had a low grade illness of long duration, false positive tests for syphilis, grand mal convulsions and stiffness and swelling of several joints. The diagnosis of systemic lupus erythematosus was not made until the development of high fever and polyserositis. The positive plasma L. E. test confirmed the diagnosis.

COMMENT

From the clinical and laboratory data presented concerning 23 patients it is evident that a positive L. E. test is associated with systemic lupus erythematosus although the presenting signs and symptoms may be suggestive of any of the group of diseases which have been called by some the collagen diseases.

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The plasma L. E. test may prove of great value in providing a means for better understanding of the problem of lupus erythematosus. It may be helpful in grading the cases. The commonly accepted classification of lupus erythematosus into acute, subacute and chronic types would seem to have become meaningless when patients, ill for several years, die from "acute" or "subacute" disseminated lupus erythematosus in the same manner as do patients ill for several weeks. Even the word "disseminated," which means "scattered; distributed over a considerable area," [13] has as little significance as does the term "lupus erythematosus" itself applied to the condition in a patient with unblemished skin.

The recent use by the British of the term "malignant lupus erythematosus" has merit if its strictest definition is adhered to, but the commonly accepted connotation discourages universal acceptance of this name.

It would be difficult and undoubtedly useless to attempt to eliminate the universally accepted name of lupus erythematosus. It might be well, however, to consider other terms, such as "systemic" or "visceral," to indicate internal involvement when the L. E. test is positive. Michelson's [14] suggestion of grading the disease according to a sum total of all factors may prove extremely valuable.

The validity of the L. E. test depends, in a large measure, on the interpretation of the cases in which the diagnosis before the L. E. test was rheumatoid arthritis and the clinical course prolonged with relatively infrequent exacerbations. Patients with these signs could be considered as having either atypical rheumatoid arthritis or variations of lupus erythematosus. Since rheumatoid arthritis is considered nonfatal,[15] the fact that four patients diagnosed as having had rheumatoid arthritis for years died of lupus erythematosus lends support to the hypothesis that the L. E. test is an accurate indicator of systemic lupus erythematosus despite atypical clinical appearances.

Further support for the specificity of the L. E. test is furnished by the list of conditions given in table 1 in which the L. E. test was negative. It will be noted that the patients with multiple myeloma and cirrhosis did not have positive plasma L. E. tests in spite of abnormally high gamma globulin determinations.

The present study suggests that a patient with "atypical" rheumatoid arthritis or rheumatic fever and positive serologic tests for syphilis may have lupus erythematosus and false positive tests for syphilis. In the presence of a negative complement fixation test and a positive though low titer flocculation test the performance of the plasma L. E. test is especially valuable and may avoid unnecessary and futile treatment.

Similarly, an epileptic person with one or more of the signs of so-called collagen disease may have a positive L. E. test to account for the convulsive seizures. Premenstrual epileptiform attacks should be most assiduously studied with systemic lupus erythematosus in mind.

My experiences with the plasma L. E. test suggest to me that lupus erythematosus is a more widespread disease than has been heretofore suspected and may be the cause of many unthought-of symptoms.

The possibility exists that false positive L. E. tests may be found in the future, for the test depends on a rather unusual serologic procedure. It is possible that other diseases will produce a substance similar to the L. E. factor which will induce the L. E. phenomenon. Until further evidence appears to the contrary, however, the plasma L. E. test may be considered specific.

SUMMARY

A consideration of the significance of the plasma L. E test in the diagnosis of systemic (acute or subacute disseminated) lupus erythematosus based on clinical an laboratory data of 23 patients results in the followin conclusions:

The plasma L. E. test is a valuable diagnostic procedure in systemic lupus erythematosus.

The plasma L. E. test may correlate many seemingl unrelated conditions under the diagnosis of systemi lupus erythematosus.

The plasma L. E. test continues positive longer tha any other laboratory test during remissions of lupus erythematosus.

Systemic lupus erythematosus may be misdiagnose as epilepsy, and false positive tests for syphilis have bee noted. The plasma L. E. test is especially indicated whe these diseases are seen in combination with atypic rheumatoid arthritis.

A negative plasma L. E. test may occur and be d to an abnormally low gamma globulin in a patient wi systemic lupus erythematosus.

The plasma L. E. test is an indicator of systemic i volvement in lupus erythematosus and is not valuab in making a prognosis.

The term "systemic," when the plasma L. E. test positive, may be preferable to "acute or subacute di seminated" in the terminology of lupus erythematosu

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[14] Michelson, H. E.: Personal communication to the author.

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Medicine in Paris in 1828.—Paris was the Mecca of medicir during the first half of the nineteenth century, the medical s premacy of the French metropolis attracting physicians ar students from all parts of the world. By 1826 there were alread American students in Paris, and their number increased as tim went on. The influence of the French school on the developme of American medicine has been recognized and explored by Osl and others. Nowhere, however, is the impact of medical Par on foreigners more vividly presented than in the hitherto unpu lished diary kept by Peter Solomon Townsend, a New Yo physician, on his visit to Paris in 1828. The Paris school was the at the height of its fame and throughout the Townsend diary oc cur the names and personalities of the medical and surgica leaders—Broussais, Lisfranc, Desgenettes, Larrey, Dupuytre Magendie, Villermé, and others. Wherever Townsend went, an he visited almost every hospital and educational institution i Paris, he recorded these experiences in his diary. As a resul his record contains a very detailed and vivid picture of medic conditions and establishments.—An American Doctor in Par in 1828: Selections from the Diary of Peter Solomon Townsen M.D., George Rosen, *Journal of the History of Medicine an Allied Sciences*, Winter, 1951.

INTRAVENOUS USE OF ALCOHOL IN THE SURGICAL PATIENT

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and
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Alcohol in its various forms has played a part in medical treatment since medieval times. In the past the reports of the therapeutic application of alcohol have been so colored by empiricism, poorly controlled observations and even facetiousness that its true value has been confused and unappreciated.

The use of alcoholic fumes for anesthetic purposes is recorded as early as 1513.[1] The first mention of alcohol administered intravenously was in a Latin dissertation by Stirius in 1668.[2] In 1823 Magendie used intravenous injection of dilute alcohol containing camphor in treating cholera.[2]

In 1920 Behan reported the intravenous use of alcohol postoperatively to relieve pain and produce relaxing sleep.[3] In 1929 Marin wrote his doctoral thesis on the subject "Intravenous Anesthesia with Ethyl Alcohol."[4] The popularity of this method, however, was curtailed because users reported such complications as hemolysis and agglutination of erythrocytes, sclerosis of the blood vessels, shock and decreased urinary output. In 1939 Mueller reviewed a series of 2,000 patients in whom 5 and 10 per cent alcohol solutions were infused intravenously.[5]

For the past nine years we have been using intravenous injections of alcohol in the operative and postoperative management of the surgical patient. In May 1945 we published a preliminary evaluation based on an analysis of 150 cases.[6] Since then its use has developed until now we find it filling an important place in the postoperative care of selected patients. Dr. Vincent J. O'Conor first gave 5 to 10 per cent alcohol intravenously in his operative cases in June 1941. The value of this drug is attested by the continuation of its use in his genitourinary service since that time as a routine in practically all major operative cases. During this period at Wesley Memorial Hospital, more than 3,121 liters of 5, 7.5 and 10 per cent alcohol in isotonic sodium chloride or 5 per cent dextrose solutions with or without amino acids and vitamins has been infused into approximately 2,000 patients. It is the purpose of this paper to present our clinical observations with this useful drug.

PHYSIOLOGICAL EFFECTS

The physiological effects of alcohol have been thoroughly investigated by many scientific workers.[7] When administered parenterally, it has been found to exert sedative, hypnotic, analgesic, euphoric, vasodilator, caloric and antipyretic effects.

Alcohol belongs to the group of cerebral depressants and lessens the sensitivity to pain. It affects first the cerebrum, then the cord and, last of all, the respiratory centers, while morphine depresses the respiratory centers and cerebrum simultaneously and, to a lesser extent, the reflex excitability of the cord. Therefore, alcohol should prove more effective as a postoperative sedative than morphine.

Therapeutic doses of alcohol administered intravenously usually result in mental sedation, with dulling memory, insight and power of concentration. Thinking is fairly normal, and there is no "doped" feeling, but rather a sense of well-being and loss of anxiety. Respirations are increased. The pulse rate may increase slightly. Peripheral vasodilation occurs, causing some increase in heat loss, a slight decrease in blood temperature and occasionally a mild fall in blood pressure. Although Higgins has reported no bronchodilator or bronchoconstrictor action from alcohol given intravenously,[8] Gillespie found that infusion of a 5 per cent solution produced rest, relaxation and relief of severe dyspnea in the majority of patients in status asthmaticus.[9]

Nausea and vomiting, acidosis and headache are not concomitant with intravenous administration of alcohol; they do occur, however, when it is taken orally in comparable doses.[10] There is an increase in the flow of urine, which is due to the fluid intake, not to the diuretic effect of the alcohol alone.

Ninety to 98 per cent of the alcohol is completely oxidized as fuel for immediate energy in the normal person. Approximately 2 per cent is excreted in the urine, and 0.2 to 0.5 per cent is eliminated by the lungs. The oxidation of ethyl alcohol given intravenously is rapidly completed. Of its end products, oxygen and carbon dioxide, the latter, passing off in the lungs, acts as a respiratory stimulant.[11]

In our preliminary report[6] analyses showed 0.2 to 1.0 mg. of alcohol per cubic centimeter of blood immediately after and during the course of administration. Patients exhibited signs of inebriation when blood alcohol levels reached 0.5 to 0.7 mg. per cubic centimeter. The official United States Navy test was used in these determinations. The subjective and objective signs of increasing blood levels are concomitant with the rate of infusion, metabolic rate and individual tolerance of the patient. Ethyl alcohol given intravenously has a wide margin of safety. It is acutely fatal to man only in concentrations of about 0.5 per cent. Over 1 pound (0.5 Kg.) of unmetabolized alcohol is needed to poison

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an average adult. The toxic dose is 7.7 cc. per kilogram of body weight, while the dose for induction of analgesia and sleep varies from 1.5 to 3 cc. per kilogram of body weight. Approximately 15 cc. of 95 per cent ethyl alcohol can be administered parenterally to the average-sized adult per hour to produce analgesia and euphoria without causing the undesirable symptoms of alcohol intoxication. At this rate of administration the blood alcohol level rises slowly to approximately 0.08 Gm. per 100 cc., after which it has a tendency to level off. In the majority of patients, 40 to 60 cc. of alcohol will produce sleep lasting two to five hours.[12]

The normal person metabolizes approximately 10 cc. of pure alcohol per hour.[13] This rate is constant regardless of the concentration in the blood. If this level is exceeded, intoxication may occur. This basic fact must be kept in mind when the drug is administered. A 5 per cent alcohol solution, therefore, contains 10 cc. of 95 per cent alcohol per 200 cc. of fluid. In one hour this amount is entirely metabolized in the average person. The alcohol received by a patient in excess of 10 cc. per hour accumulates in the blood stream and is responsible for the production of analgesia, euphoria, loss of anxiety and dulling of memory, all necessary for best clinical results. Therefore, it is best to judge the rate of infusion by the subjective signs.

CLINICAL USES

Of prime importance is the sedative and analgesic quality of 5 per cent alcohol solution. We have employed it during the management of conduction anesthesia to allay discomfort of maintenance of one position for a period of time and to reduce psychic trauma of remaining alertly awake during an operative procedure. Patients who have this form of medication doze, relax, lose all apprehension and often have no memory of the surgical interlude. During the past three years the use of dilute solutions of thiopental (pentothal®) sodium (0.1 to 0.2 per cent) has supplanted administration of alcohol as a sedative during regional anesthesia because thiopental can be more easily controlled. However, alcohol is still used with gratifying results during the pinning of hips in the poor risk geriatric case.

Postoperatively, injection of the 5 per cent alcohol solution has been continued with the most gratifying results. The use of opiates or other sedatives may be eliminated entirely if the rate of administration is adjusted to the clinical response of the individual patient. *Inasmuch as the sedative effects* require 30 to 60 minutes to become well established, infusion of the solution should be started before the pain becomes severe. Usually the rate of flow is adjusted so that the first 200 cc. of solution is infused in 20 to 30 minutes; then the rate is slowed to 40 to 80 drops per minute, and the remaining portion of the liter of solution is injected in three to six hours. As much as 3 liters of a 5 to 7.5 per cent alcohol solution may be given in one 24 hour period. Usually 1 or 2 liters is sufficient. In a comparative study of patients who received 1 liter of 5 per cent alcohol during the first six hours postoperatively and those who had 1 liter of 5 per cent dextrose solution, we found that the patients who were given the alcohol intravenously required 33 per cent less sedation.

The value of intravenous administration of alcohol in postoperative recovery is twofold. It is not only given as a sedative and analgesic, but also as a safeguard against the possibility of atelectasis and other pulmonary complications. The respiratory rate and tidal exchange remain the same or are increased.

It appears that alcohol has a beneficial effect on the motility of the gastrointestinal tract and bladder, reducing the incidence of gas pains and colic and its associated sequelae and decreasing the need for postoperative catheterization.[14] Also, headaches are less frequent in the patients who have alcohol intravenously.

The combination of alcohol in 5 or 10 per cent concentration with 0.1 per cent procaine hydrochloride solution is reported as a potent analgesic agent.[15]

Full nutritional and caloric requirements can be easily provided from the use of a mixture of dextrose, amino acids and alcohol. Clinical observations have shown that patients feel better, experience fewer complications and sequelae and make a more rapid postoperative convalescence if they are provided adequate parenteral nutrition with such a mixture.[14]

Alcohol given intravenously has a special value in those cases in which nausea, vomiting and paralytic ileus prevail.[16] The caloric and energy requirements of a patient taking little or no food by mouth may be met for a short period by parenteral use of dextrose solution, supplemented with alcohol. One hundred cubic centimeters of 5 per cent alcohol and 5 per cent dextrose in isotonic sodium chloride solution or water yields a total of 437 calories, 267 being derived from the alcohol and 170 from dextrose. Both alcohol and dextrose increase the body's need for thiamine, riboflavin and nicotinic acid. Therefore, these vitamins may need to be administered when alcohol and dextrose solutions constitute the source of calories. Vitamins may be added to the alcohol solution without rendering the vitamins inactive.[5]

The vasodilatory effects of alcohol suggested its use in the cardiac patient.[17] Alcohol is one of the few effective coronary vasodilators and is considered by many to be the best drug for treatment of angina pectoris. In cardiacs a 10 per cent solution of alcohol may be used, thereby decreasing the actual amount of fluid intake necessary to supply the caloric requirement. Alcohol increases the loss of fluid through perspiration and reduces the danger of overloading the already embarrassed circulatory system.

Restlessness and pain have been reduced in the debilitated and morbid patient. In the cancer patient, who has previously been made comfortable with administration of fluids and morphine, we have greatly reduced the necessity for opiates. In the alcoholic who is approaching or has developed delirium tremens owing in part to the sudden withdrawal of his customary alcoholic intake, control with intravenous injection of alcohol has been successful when all other medications in the usual dosages have failed.

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[13] Mueller.[2] Higgins.[5]

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The complications from intravenous infusion of 5 or 10 per cent alcohol have been of minor importance. We have seen no after-effects, such as acidosis, headaches, vomiting and nausea. Occasionally, when the fluid has been given too rapidly, restlessness and inebriation occurred. It is singular that few patients have needed restraint. The infusion can be discontinued or slowed with return to the quiet state of well-being. Occasionally the administration has been complicated by a sclerosed blood vessel. This occurs more frequently with the 10 than with the 5 per cent solution. There was one partial ulnar nerve paralysis that may have been caused by alcohol subcutaneously in the cubital fossa. This case was reported previously,[6] and we have had no other instance of this complication. Because of this rare complication, we suggest the use of blood vessels other than those in the cubital fossa and recommend that the beginner at venipuncture use saline solution for the cannulation of the needle before alcohol solution is introduced. In numerous cases the alcohol has run subcutaneously without causing symptoms other than slight discomfort. This has been relieved by warm, moist applications.

Certain precautions in administration of this drug should be stressed. The reaction of the nervous system to alcohol is not always predictable. Therefore, patients receiving intravenous injection of alcohol should not be left alone for any length of time. Some patients may become excitable or irrational and require reassurance or restraint. Also, because his sensorium may be dulled, the patient may become less reactive to subjective and objective stimuli, such as the effect of a hot water bottle, electric pad or full bladder.

Care should be exercised in using alcohol solutions intravenously in the presence of shock or impending surgical shock because the peripheral vasodilatory effect could be deleterious in such conditions.

Patients with demonstrable liver damage or a history of epileptic attacks are not given alcohol intravenously after operation in our clinic.

SUMMARY

During the past nine years 3,121 liters of alcohol in 5, 7.5 and 10 per cent concentrations has been given intravenously to 2,000 patients.

Five and 10 per cent alcohol solutions given intravenously increase the caloric intake and have special value in patients with inanition.

Alcohol may be used intravenously in cardiac patients with relative safety because of its vasodilatory action and minimal effect on the blood pressure. It has a definite value as a sedative during regional anesthesia in combination with nitrous oxide and oxygen. It has been used with gratifying results to supplement local anesthesia for hip pinnings in the geriatric patient. With its use the need for postoperative sedation by narcotics was reduced 30 to 50 per cent in a comparative study of parallel series of patients undergoing similar surgical experiences.

We realize that any study must take into consideration the individual temperament and reactive character of each patient. However, we are so enthusiastic about the value of this procedure that we feel it should be advocated much more widely in the postoperative management of the surgical patient.

ABSTRACT OF DISCUSSION

Dr. Urban H. Eversole, Boston: It is gratifying to hear such a favorable report on such an impressive series of cases. We have used alcohol intravenously nowhere near as many times, and our use of it has largely been limited to patients who have had operations around the vertebral column and the great muscles of the back. These patients often have severe pain accompanied with muscle spasm postoperatively. Although this agent has been most helpful on several occasions in affording some relief for these patients, we cannot report as good results as have Drs. Karp and Sokol. I am sure that at least part of our inability to obtain better results is due to our failure to appreciate fully the rapidity with which alcohol is metabolized in the body. After hearing this paper, I am convinced that we expected too much too soon and did not make sufficient allowance for the amount of alcohol, over and above that metabolized by the body, that is required to produce the desired effect. We were, however, impressed on numerous occasions with the general feeling of well-being possessed by patients after the intravenous administration of alcohol. Although Drs. Karp and Sokol have tended to stress the pain-relieving properties of intravenous injection of alcohol more than its value as an energy-providing agent, it would seem that the latter action may well be of great importance, particularly in the management of many nutritional problems in both preoperative and postoperative surgical patients. In this respect, I should like to ask Dr. Karp if, with the use of alcohol alone, or of alcohol in dextrose or of alcohol, dextrose and protein, they actually saw a patient gain weight with intravenous therapy alone. I can say that I have never really seen a patient gain weight with intravenous therapy alone. Drs. Karp and Sokol state that they do not give alcohol intravenously to patients with demonstrable liver damage. Since so many patients who are in a poor nutritional state and whose caloric intake one would like to increase do have demonstrable liver damage, I would be interested to know whether they have any evidence that intravenous use of alcohol is harmful to patients with demonstrable liver damage. My own reasoning would lead me to suspect the opposite to be true. On the basis of this report and others, there is no doubt in my mind but that this adjunct in the management of certain surgical cases deserves more widespread investigation.

Dr. T. L. Schulte, San Francisco: After hearing this paper, it would seem that the intravenous use of alcohol according to the method and technique of Drs. Karp and Sokol offers a greater margin of safety and is a more useful agent than the opiates and hypnotics available at present in the field of geriatric surgery. This interesting paper is so complete in every detail that it needs no further comment.

Dr. Mary Karp, Chicago: In reference to Dr. Eversole's question regarding weight gaining with intravenous administration of alcohol, I have not seen any patient gain weight with this therapy alone. Clinically, I have not seen evidence of harmful effects from the intravenous administration of alcohol in patients with demonstrable liver damage. However, on the basis of reports found in literature it would appear preferable to refrain from its use in patients who have serious liver damage.

METHEMOGLOBINEMIA ASSOCIATED WITH PYRIDIUM® ADMINISTRATION

REPORT OF A CASE

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and
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Methemoglobin formation with resulting anemia has received considerable attention in the recent literature. The toxic effect of such drugs as the nitrites, the sulfonamides (with the exception of sulfadiazine® and sulfamerazine®) and the aniline dyes[1] has been most commonly implicated as a causative mechanism. The aniline dyes have provided a particular hazard because they are able to penetrate the intact skin and have, therefore, been responsible for poisoning resulting from the contact with freshly marked diapers in the hospital nursery.[2] The nitrate content of well water used in the preparation of a feeding formula has been a proved cause of cyanosis and methemoglobinemia in infants, the nitrates being converted to nitrites by the action of the intestinal bacteria.[3] Other causes of methemoglobinemia include an idiopathic form with a familial incidence in which the defect seems to be inherent in the red cells.[4] An enterogenous form is reported in the literature,[5] and two cases have recently been observed showing an acquired hemolytic anemia.[6]

It is the purpose of this report to add phenylazodiamine-pyridine hydrochloride (pyridium®) to the list of drugs used clinically that are known to produce methemoglobinemia. The use of this azo dye as a urinary antiseptic has largely been supplanted by the more effective chemotherapeutic and antibiotic agents. It is now chiefly employed as a urinary analgesic and as a urine-coloring agent to facilitate certain cystoscopic procedures.

When the dye is used in massive doses in dogs, according to Walton,[6] methemoglobinemia may be produced. To our knowledge there have been no published reports of this occurring clinically.

REPORT OF CASE

W. P., a white boy, was first seen in the Diagnostic Clinic of the University of Texas in March 1947, at the age of 3 months. It was found that he had a complete bladder exstrophy, epispadias, bilateral indirect inguinal herniae and an undescende right testicle.

Surgical corrective measures were deferred because of hi age until February 1949. At this time a bilateral ureterosigmoidostomy (Coffey I) was performed. The defect in the abdominal wall was repaired after removal of the exstrophic bladder. In October 1949 plastic repair of the epispadias was begu No significant postoperative complications occurred.

An intravenous urogram in October 1949 revealed bilater hydronephrosis of a moderate degree. Nonprotein nitroge determinations ranged from 22 to 39 mgm. per 100 cc. Th hemoglobin content was 11.3 Gm. per 100 cc. and the red ce count was 3,800,000 at the time of his discharge in March 194

In April 1950 the patient returned to the Children's Hosp tal for evaluation. He had been essentially asymptomatic durin this outpatient interval. Physical examination showed some r tardation in growth, with a weight of 13.2 Kg. (29 pounds a height of 96 cm. and a head circumference of 49 cm. Th remainder of his examination demonstrated only some discret shotty, nontender adenopathy in the cervical lymph chains, liver palpable 2 cm. below the right costal margin and th abdominal scars of his previous surgery. The partially repair epispadias was present.

The blood count on April 7, 1950 revealed a hemoglob content of 10.7 Gm. per 100 cc., a red cell count of 4,360,0 and a white cell count of 10,500 with a normal differenti count.

The administration of phenylazodiamine-pyridine hydrochl ride in doses of 0.1 Gm. every six hours was started on Ap 25, 1950. On May 2, 1950 the dosage was increased to 0.1 G every three hours, which is an adult dose. The patient was r ceiving a multiple vitamin preparation as his only other med cation. The dye was given in an effort to color the urine deep so that the ureteral ostia could be more readily identified end scopically in the bowel and an effort made to catheterize them

On May 5, 1950 the child was noted to have faint cyanos of the nail beds, lips and ears. The patient was in no appare distress, was afebrile, and examination revealed no cardior spiratory pathology. The skin appeared quite pale. Pulse ra was 120 per minute, and the respiratory rate was 20. Comple blood count at this time showed a hemoglobin content of 7. Gm. per 100 cc. with 1,700,000 red blood cells; white ce total was 14,900 with a slight left shift.

The patient's venous blood, when compared with veno blood from another patient, appeared chocolate brown and di not change to red with aeration. Spectrophotometric determ nation by the method of Evelyn and Mallory[7] demonstrated level of 1.12 Gm. of methemoglobin per 100 cc. to be presen The band for methemoglobin was seen at 635 millimicrons an disappeared with the addition of 5 per cent potassium cyanid solution, thus differentiating it from the sulfhemoglobin ban at 620 which would remain constant.

Therapy consisted of oral administration of methylene blu in doses of 5 mg. per kilogram of body weight every four hou and a single blood transfusion of 250 cc. On May 6, 1950 a bloo count showed 6.8 Gm. of hemoglobin per 100 cc., 2,150,00 red blood cells and a normal white cell total and differenti count. By May 10, 1950 the hemoglobin content had risen t 11.0 Gm. per 100 cc., and the red cell count, to 3,700,000. O May 22, 1950 the methemoglobin level was 0.04 Gm. pe 100 cc.

Because proof of these unusual circumstances, by reproduction of the methemoglobinemia, was required for documentation, administration of the dye was resumed in the previou dosage. Within 24 hours the methemoglobin level was 0.8 Gm. per 100 cc., and 48 hours later a value of 1.36 Gm. pe

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100 cc. was obtained. Cyanosis was again observed, and the administration of methylene blue was again instituted for a period of three days. In June 1950 the hemoglobin content was 10.7 Gm. per 100 cc. and the red cell count was 3,480,000.

The dye was run as a blank in the spectrophotometer, and at the wave length of 635 Å a reading could not be obtained. The addition of cyanide caused no change. It was felt that the readings obtained on the blood specimens were definitely due to methemoglobin and not to the presence of the dye itself.

CONCLUSION

A case report is presented demonstrating that in large doses phenylazodiamine-pyridine hydrochloride (pyridium®) caused methemoglobinemia in a child. This toxic effect must be considered when the drug is administered to children or others in large doses or for prolonged periods of time.

STATUS EPILEPTICUS COINCIDENT WITH USE OF PITUITARY ADRENOCORTICOTROPIC HORMONE

REPORT OF THREE CASES

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and
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The therapeutic use of pituitary adrenocorticotropic hormone (ACTH) and cortisone is frequently accompanied with reactions resulting from known metabolic effects. The appearance of psychotic states and changes in the electroencephalogram during the administration of the hormone have been noted.[1] While investigating the therapeutic effects of the hormone on connective tissue diseases in children, we have observed in three of 40 patients episodes of status epilepticus lasting from five to seven hours. In these instances the spinal fluid protein was temporarily elevated, and abnormal bursts of electrical activity, as well as neurological signs, persisted long after the restoration of consciousness. The first of these patients, observed now for more than one year, has widespread brain damage. Abnormal neurological signs were present in the second patient three weeks following the convulsive episode, but mild personality changes are the only residuals. The third patient has no apparent neurological damage at present.

REPORT OF CASES

Case 1.—D. G., a 13 year old white boy, was admitted to the University of Chicago Clinics on Feb. 10, 1950, to be treated with pituitary adrenocorticotropic hormone for dermatomyositis. His past illnesses included a poorly described series of dizzy spells at the age of 5 years. This boy had lived most of his life in an unstable social situation and showed evidence of psychiatric disturbances early in life. His present illness was reported to have started 2½ years previously, when severe pain in the legs developed. Since then his clinical course has been characterized by intermittent episodes of severe pain in the muscles and joints, recurrent fever, macular lesions of the extremities and swelling of the face. On admission, there were signs of acute illness as well as manifestations of chronic, progressive disease. There was marked muscular wasting. Atrophic changes in the skin were most apparent on the dorsum of the hands and on the abdomen. The slightest motor activity was performed with great effort and was accompanied with exquisite pain. Flexion contraction was observed at the elbows and knees. The neurological examination, limited by difficulties in motor activities, revealed only slurred speech. His temperature soon rose to 104 F. Laborataory studies revealed the following data: 23,200 white cells per cubic millimeter, 83 per cent polymorphonuclear leukocytes, 10.2 Gm. of hemoglobin per 100 cc. of blood, erythrocyte sedimentation rate (Wintrobe, uncorrected) 60 mm. per hour. Results of urinalysis, the electrocardiogram and the x-ray of the chest were normal, and biopsy of the skin and muscle confirmed the clinical diagnosis of dermatomyositis.

For 12 days the patient's clinical condition remained essentially unchanged. His temperature fluctuated between 102.2 and 104 F. On February 21 he began to receive 20 mg. of pituitary adrenocorticotropic hormone intramuscularly four times a day. Twenty-four hours after administration of the drug was started, the patient started to move his head without experiencing pain. His temperature returned to normal. On February 23 the dose of the drug was decreased to 10 mg. every six hours. By March 2 the patient was up in a chair for short periods and was able to take tub baths. Thirteen days after administration of the drug was started the hemoglobin and the hematocrit readings were significantly elevated, while the white blood cell count was significantly lowered. The erythrocyte sedimentation rate was 12 mm. per hour. The patient's appetite was voracious. These improvements coincided with continued recovery of motor abilities. The dosage of the drug was reduced to 5 mg. every six hours. After a muscle biopsy on March 9, sixteen days after therapy was started, the patient was found to be confused and disoriented. The psychiatric picture was that of a toxic-delirious reaction characterized by confusion, disorientation, fearfulness, preoccupation with death and intermittent contact with reality. He was transferred to the psychiatric ward of the hospital on March 11. It was decided, in view of the seriousness of his underlying illness and a history of a previous episode of confusion, to continue the administration of the hormone in doses of 20 mg. a day.

The administration of pituitary adrenocorticotropic hormone was discontinued, however, on March 14, when the patient had three short major convulsions. Neurological examination yielded no localized findings. The spinal fluid contained 90 erythrocytes per cubic millimeter and 48.5 mg. of protein per 100 cc. but was not xanthochromic. The presence of erythrocytes was attributed to trauma during insertion of the needle. During the early morning of March 15 status epilepticus developed that was controlled only after seven hours, during which time 0.27 Gm. of phenobarbital (luminal®) sodium was given. For the next three days the patient was in deep coma. There were mild signs of a left-sided weakness. Results of chemical studies of the blood were essentially normal. On March 20 there were beginning signs of motor activity and the patient was able to take fluids by mouth. He responded to questions only by repeating over and over again the last word or last syllable of the question posed. The spinal fluid protein level on March 21 was 112 mg. per 100 cc.; there were no cellular elements. Purposeless motor activity increased, and the patient

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Grace M. Clausen Johnson Fellow (Dr. Smull), and Damon Runyon Fellow in Medicine (Dr. Bergenstal).

From the Departments of Pediatrics and Medicine, the University of Chicago, and La Rabida Jackson Park Sanitarium.

This investigation was supported by grants from the Chicago Heart Association and from the National Heart Institute of the National Institutes of Health, Public Health Service.

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gradually regained consciousness. By March 30 he responded to questioning in a somewhat vague and bewildered fashion. Neurological examination at this time revealed profound agnosia and apraxia, interpreted to indicate diffuse cortical involvement. The spinal fluid protein four weeks and five weeks after the onset of status epilepticus was 104 and 122 milligrams per 100 cc., respectively. In neither instance was there an abnormal cell count. Subsequent psychiatric examinations revealed a severe alteration of the patient's personality function.

The principal neurological disturbances remaining one year after the acute episode were the frequent occurrence of seizures resembling psychomotor attacks and the presence of apraxia and of aphasic symptoms, of which alexia was the most prominent. He could name a folder of matches but was unable to strike the match when told to do so. Instead he fumbled in an aimless and puzzled way with the match and the folder. When asked to read the printed word "matches," he responded with his name. He could not read the number 14, and when asked what it was he said "like an abbreviation." In the last few months he has had a number of convulsive episodes preceded by impulsive destructive behavior.

CASE 2.—P. M., a 6 year old white girl, was admitted to the La Rabida Sanitarium on July 15, 1950 for treatment of a recurrent attack of acute rheumatic fever. Although pale, she was well developed and well nourished and did not appear acutely ill. There was a grade III harsh systolic murmur at the apex that was transmitted towards the axilla. Her pulse was 80, and the blood pressure was 118 mm. systolic and 60 mm. diastolic. The laboratory findings on admission were as follows: 13 Gm. of hemoglobin per 100 cc., 9,000 white blood cells per cubic millimeter and a sedimentation rate of 53 mm. per hour. X-ray of the chest and urinalysis revealed no abnormalities. The electrocardiographic studies showed a P-R interval of 0.22 second. Her temperature fluctuated from 97.5 to 101.5 F. The past history provided no evidence of convulsive episodes or serious psychiatric disturbance. However, she was observed to be extremely shy and reserved. She responded to questions only in monosyllables and did not make efforts to engage her hospital mates in conversation or in play.

On the tenth hospital day, July 24, pituitary adrenocorticotropic hormone therapy was instituted. She was given 60 mg. a day during the first four days and then 40 mg. a day for the next 16 days. She received a total dose of 0.83 Gm. Three days after therapy was begun her temperature became normal and persisted at that level. During the 20 days of therapy there was no change in the character of the apical systolic murmur. However, other clinical and laboratory findings indicated that she had a remission of her rheumatic fever. The blood chemistry studies on August 7 showed the following data: pH 7.39, carbon dioxide content 30.4 milliequivalents per liter; chloride 99.3 milliequivalents; serum sodium 144 milliequivalents and serum potassium 4.45 milliequivalents.

On August 12, twenty days after the beginning of the hormone therapy, the patient appeared listless and complained of mild abdominal cramps and anorexia. The blood pressure was 140 mm. systolic and 100 mm. diastolic. The abdomen was moderately distended. At 1:20 p. m. that day status epilepticus developed which lasted for three hours despite large doses of phenobarbital. The patient then lapsed into coma for six hours. The blood pressure fell to 128 mm. systolic and 102 mm. diastolic. The spinal fluid was clear; there were three red blood cells per cubic millimeter, and the total protein content was 102.2 mg. per 100 cc. She remained semiconscious for the next day. On August 14 she had an akinetic seizure, which lasted two minutes and was not followed by confusion. At that time the blood pressure was 120 mm. systolic and 80 mm. diastolic. On the following day the serum potassium was 3.7 milliequivalents per liter. It has remained at this level. Four days after the convulsions the patient was euphoric and somewhat confused, but the neurological examination revealed no abnormalities. The euphoria disappeared in two days. During the third week (September 1), however, bilateral hyperactive deep reflexes and mild clonus of the right ankle were elicited. At that time the spinal fluid was clear and contained a total protein of 29.5 mg. per 100 cc. Only hyperactive tendon reflexes have persisted. The electroencephalographic tracings taken one month after the status epilepticus showed continuous activity of rather slow amplitude (2.6 per second to 6.0 per second activity), which was augmented during hyperventilation. The electroencephalogram taken two months later was less suggestive of convulsive diathesis.

CASE 3.—J. A., a 10 year old Negro boy, was well until one month before admission, when low grade fever, epigastric pain and pains in the legs and feet developed. During the ensuing month he had episodes of chills, vomiting, chest pain, diarrhea and a constant fever. Salicylates in large doses had little effect on the temperature curve. On admission, the patient was well nourished and not in acute distress. His temperature was 102.2 F., pulse rate 138, and blood pressure 120 mm. systolic and 80 mm. diastolic. The relevant physical findings were confined to the skin where there were large round maculas arranged in streaks or annular configurations which did not blanch on pressure. The results of the laboratory studies were as follows: 13,800 white blood cells per cubic millimeter, 9.4 Gm. of hemoglobin per 100 cc., 3,740,000 red blood cells per cubic millimeter, and sedimentation rate (Wintrobe, uncorrected) 64 mm. per hour. The urine was normal. Kahn and intradermal tests with tuberculin, coccidioidin and histoplasmin elicited negative reactions. Repeated blood cultures, agglutination tests and stool cultures showed only a 1:1,160 titer for Shigella paradysenterial (Flexner's bacillus), which later dropped to 1:80. The chest x-ray showed clear lung fields and a 25 per cent enlarged cardiac shadow. The electrocardiogram was normal. A skin biopsy specimen taken shortly after admission showed lesions typical of periarteritis nodosa.

After admission to the hospital, the patient continued to have spiking temperature curves, exceeding 104 F. on some days. A wide variety of antibiotics, as well as salicylates, had no effect on the febrile course. Several days after admission, pain and discoloration of the second and third toes of the right foot developed. One month after admission the administration of the hormone in doses of 20 mg. four times a day was started. The temperature curve immediately became normal, and the patient felt subjectively much improved. After three days the dosage was decreased to 60 mg. a day and maintained at this level for 14 days. The temperature remained normal, the rash became less noticeable and the toes appeared improved. The sedimentation rate remained markedly elevated. For the next two weeks the dose was again raised to 80 mg. a day. This resulted in the return of the sedimentation rate to normal. When the dose of the drug was lowered to 40 mg. a day, the temperature curve again became abnormal, the sedimentation rate rose rapidly and the patient again felt subjectively sick. It was found necessary to maintain a dosage of 60 mg. a day for the next four weeks in order to maintain remission. During this period marked rounding of the face and acne developed. The blood pressure rose gradually to an average level of 160 mm. systolic and 110 mm. diastolic and remained at this level. There was only slight evidence of chemical abnormality during this period. For the next four weeks the dosage of the hormone was gradually decreased. During this period the patient remained afebrile and asymptomatic. The sedimentation rate continued within normal range. After the ninety-second day of therapy, while the patient was receiving 20 mg. of the hormone a day, he complained of headache. Several hours later he exhibited a peculiar stare and became irrational. This was followed rapidly by a major convulsion. Administration of the hormone was discontinued and that of phenobarbital sodium started. Several hours later status epilepticus developed, which continued for five hours before being controlled with paraldehyde intramuscularly. Lumbar puncture revealed that the spinal fluid was abnormal only with respect to a protein level of 41.5 mg. per 100 cc. Results of blood chemistry studies done several days before the convulsions and during the status epilepticus showed no marked abnormalities.

After the period of convulsions, the patient lapsed into coma, from which he gradually roused during the next several days. Three weeks after the status epilepticus he had no evidence of abnormal neurological signs. The spinal fluid protein returned to normal one week following the convulsions.

Electroencephalograms taken immediately after the episodes of status epilepticus showed changes similar to those found in case 1. Although the patient showed no neurological abnormalities six weeks later, the electroencephalogram was markedly abnormal.

COMMENT

The appearance of psychotic reactions during the administration of pituitary adrenocorticotropic hormone and cortisone has been reported by several investigators. Soffer and his associates [2] have observed convulsive episodes in four patients with lupus erythematosus disseminatus, but they point out the high incidence of this manifestation in untreated patients with this disease. In view of the greater availability of pituitary adrenocorticotropic hormone and cortisone, it is important to assess the dangers involved in their use. The hazards of salt retention, disturbances of carbohydrate metabolism, potassium deficiency and hypertension have been dealt with extensively by various workers and have been, in general, less severe than originally anticipated.

In the three patients discussed in this report status epilepticus developed, with subsequent evidence of temporary or permanent damage to the central nervous system. The prolonged convulsive episode appeared in patients with different clinical syndromes. Status epilepticus appeared at widely varying times in the course of therapy and while relatively small doses were being used and was accompanied with elevation of spinal fluid protein. In two of the patients the convulsive episode was preceded by a toxic-delirious reaction. In none of the patients was there a serious disturbance of electrolytes as measured in the blood serum at the time of the epileptic event. Adrenal hormones may, of course, produce marked changes in the composition of the intracellular fluid which are not adequately reflected in the composition of the extracellular fluid.[3] Ransohoff and his associates [4] have recently reported the rapid reversal of psychosis and electroencephalographic changes with intravenous administration of potassium. None of our patients had received added potassium while receiving the hormone.

In view of the increasingly widespread use of these drugs in the therapy of many different diseases it seemed important to report the appearance of status epilepticus during the administration of pituitary adrenocorticotropic hormone in three of the 40 children who have been treated. Final conclusions regarding the etiological relationship between the hormone and the convulsions cannot be made at this time.

ADDENDUM

Since this manuscript was prepared for publication we have observed an isolated convulsion in a 10 year old girl who was being treated with cortisone (200 mg. a day) for disseminated lupus erythematosus. Her spinal fluid protein was normal.

[2] Soffer, L. J.; Levitt, M. F., and Baehr, G.: Arch. Int. Med 86: 558, 1950

[3] Gaudino, M., and Levitt, M. F.: J. Clin. Investigation 28: 1487, 1949.

[4] Ransohoff, W., and others, read before the Second Armour ACTH Conference, Chicago, Dec. 8-9, 1950.

METHODS AND TECHNICS FOR SURGICAL CORRECTION OF STRESS INCONTINENCE

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Urinary stress incontinence in women is the same in any country and is almost always caused by bearing children. It occurs also in older women who have not borne children, but then it is usually due to a loss of muscle tone incident to the menopause and atrophy of tissue supports of the vesical neck and urethra.

It has been a universal gynecologic experience that about 75 per cent of patients suffering from a mild degree of stress incontinence will be completely cured or greatly relieved by a plastic repair of the vesical neck and urethra, alone or in combination with repair of cystocele, urethrocele and the pelvic floor. About 25 per cent have recurrence of their trouble and do require more study and more extensive surgical repair. All these operations are intended to elevate the vesical neck and urethra and to elongate the urethra somewhat.

It has been shown by the careful investigations of Millin and Read,[1] Ingelman-Sundberg,[2] Muellner,[3] Marshall [4] and Marshall, Marchetti and Krantz [5] that in stress incontinence, there are usually varying degrees of pathologic ptosis of the bladder. The severer the ptosis, the greater will be the incontinence. Ingelman-Sundberg [6] has expressed the belief that the incontinence is due to a relaxation of the pelvic floor, which allows the bladder to come down into micturition position with abnormal ease. This leads to a decompensation of the internal urethral sphincter. There is a normal displacement of slight degree of the bladder downward and backward which is regarded as micturition mobility. Whatever overexaggerates this position by relaxation of the pelvic floor, or any trauma that produces fixation of the urethra or vesical neck to such a degree as will hold open the internal urethral orifice will result in incontinence. There are a few patients, however, that have some incontinence with extremely little ptosis. These are principally older patients, and their incontinence is often considered as neurogenic or just atrophic or degenerative in character.

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Read before the Section on Obstetrics and Gynecology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

[1] (*a*) Millin, T., and Read, C. D.: Stress Incontinence of Urine in the Female, Post Grad. M. J. 24: 3 (Jan., pt. 1) 1948. (*b*) Millin, T., and Read, C. D.: Stress Incontinence of Urine in the Female: Millin's Sling Operation, Post Grad. M. J. 24: 51 (Feb., pt. 2) 1948.

[2] Ingelman-Sundberg, A.: The Pubovesical Ligament in Stress Incontinence, Acta obst. et gynec. Scandinav. 28:(fasc. 3-4): 185, 1948-1949.

[3] Muellner, S. R.: The Etiology of Stress Incontinence, Surg., Gynec. & Obst. 88: 237 (Feb.) 1949.

[4] Marshall, C. McI.: Relief of Severe Stress Incontinence: Technique and Anatomy of Two Suprapubic Fascial Operations, J. Obst. & Gynaec. Brit. Emp. 55: 126 (April) 1948.

[5] Marshall, V. F.; Marchetti, A. A., and Krantz, K. E.: The Correction of Stress Incontinence by Simple Vesicourethral Suspension, Surg., Gynec. & Obst. 88: 509 (April) 1949.

[6] Ingelman-Sundberg, A.: Operationsteknik vid urininkontinens, Nord. med. 32: 2297 (Oct. 4) 1946.

Our records of the past five years show that many of the patients who have been surgically treated for incontinence have had other associated pelvic conditions which also required surgical treatment. These conditions are cystocele, urethrocele, prolapse of the uterus, prolapse of a retained cervical stump, menometrorrhagia, small fibroids and recurring uterine polyps. In some cases the incontinence was the patients' primary concern, but in a large percentage the incontinence was incidental to other pelvic trouble. Usually they fail to mention it in their complaint unless specifically questioned concerning it. This is explained by the fact that the patients have had the incontinence, or "weakness of the bladder" as they call it, for so many years that they are accustomed to it and usually are surprised to learn that something may be done for it.

It has become important then to inquire about the urinary control of every patient who is to have vaginal plastic surgery, because if during the necessary pelvic surgery some attention is not given to elevation of the urethra and vesical neck, not only will the patient continue to have her incontinence but it may be made considerably worse. This is particularly true in many patients with prolapse and large cystoceles.

This study and the conclusions are based on 578 patients surgically treated for urinary stress incontinence which was part of, the whole of or their major pelvic complaint. The operations were performed during the past five years at the Mayo Clinic.

SELECTION OF PATIENTS

When there are associated pelvic conditions which require surgical treatment, there can hardly be any selection of patients, providing the patient presents a satisfactory surgical risk. Advanced age, crippling arthritis and severe cardiac disease almost always are sufficient reasons for rejection of a patient for surgical correction of incontinence or prolapse and cystocele. In the cases in which pelvic repair is applicable, corrective measures should be done for the incontinence.

Patients who have little, if any, cystocele and those with a congenitally short anterior vaginal wall are not favorable for any plastic procedure on the urethra or vesical neck for the incontinence. Those who have begun to have atrophic contractions of the vaginal walls probably should be excluded from the favorable group for vaginal approach to the incontinence problem. Extensive scarring from previous vaginal operations usually but not always contraindicates any further vaginal procedures. The incontinence in most of these patients is due to fixation of the urethra and vesical neck in scar tissue. The sphincteric mechanism is unable to contract or relax. This type of incontinence has not infrequently been completely cured or greatly relieved when the anterior vaginal wall is opened, the urethra and vesical neck then being separated from the vagina and the posterior surface of the pubis. These structures are elevated by an iodoform gauze pack placed around the urethra and under the vesical neck. The pack is left in position eight to 10 days and then replaced with a second pack with the patient under intravenous anesthesia. This pack is left another five to seven days until the bladder remains elevated by itself and does not get reattached to the vagina or pubic bone. The vesical sphincter, if not seriously damaged by scar tissue, will begin to function normally again in some instances. This is a simple operative procedure and should be considered before one ventures into more major suprapubic operations.

The more experience one has with this problem, the more aware one becomes of the desirability of some method of helping the group of patients whose complaint is incontinence and who actually are not in much need of any pelvic repair. It has never seemed the right method of approach to submit these patients to major attempts to elevate the urethra and vesical neck surgically, unless the incontinence was induced or made worse by a previous surgical procedure on the bladder or uterus.

A point of considerable importance in the etiology and as an aid in the decision of how to treat the patient, it seems to me, is the slow onset of this condition over a period of years, rather than an abrupt onset. The majority are traceable to a difficult or prolonged obstetric delivery, which has to be interpreted as a tear or stretch of whatever fascial or muscular structure maintains the urethra and sphincteric mechanism in its normal position.

The object of suprapubic operations is to elevate the urethra and vesical neck by means of some type of fascial sling, and of these operations there are many. Among these should be listed the operations of Aldridge,[7] Miller,[8] Millin and Read,[11] Goebell [9] and Stoeckel.[10] Some are combined with a vaginal plastic repair of the sphincteric mechanism and urethra, such as the useful Kelly [11] operation or the more extensive Kennedy [12] technic. The fascial strips may be taken in different ways from the recti and oblique fasciae and sutured beneath the urethra or else brought around the urethra just in front of the vesical neck, the fascial ends then being reattached over the recti muscles.

To obtain these fascial strips is not so simple as it appears from artists' drawings, and I should like to point out some of the difficulties that may be encountered: (1) If the patient has had a low abdominal vertical incision previously, the recti fascia will, of course, consist of part scar tissue, and this scar tissue will tear more easily than the unscarred fascia and will not give the support one desires. If the fascia has been incised transversely, this fascial defect becomes serious because it may tear loose from its attachment near the symphysis. (2) Fascial strips which are obtained by transverse incisions may be too short for satisfactory support of the vesical neck unless these strips are taken in a curved fashion extending upward and outward to include the external oblique fascia. Some patients who require such extensive operations for their incontinence are obese, and the oblique fascia in them is thin and not too useful for the support of the vesical neck that is required to correct the incontinence. If the incontinence has come on in later years in patients who have not had children, then one must consider the loss of the supporting structures as due to atrophy if it is not a result of some degenerative disease of the central nervous system.

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[7] Aldridge, A. H.: Transplantation of Fascia for Relief of Urinary Stress Incontinence, Am. J. Obst. & Gynec. 44:398 (Sept.) 1942.

[8] Miller, N. F.: The Surgical Treatment of Urinary Incontinence in the Female, J. A. M. A. 98:628 (Feb. 20) 1932.

[9] Goebell, R.: Zur operativen Beseitigung der angeborenen Incontinentia vesicae, Ztschr. f. gynäk. Urol. 2:187, 1910.

[10] Stoeckel, W.: Über die Verwendung der Musculi pyramidales bei der operativen Behandlung der Incontinentia Urinae, Zentralbl. f. Gynak. 41:11 (Jan. 6) 1917.

[11] Kelly, H. A.: Gynecology, New York, D. Appleton and Company, 1928: Bladder and Urethra, chap. 40, pp. 804-872.

[12] Kennedy, W. T.: Urinary Incontinence Relieved by Restoration and Maintenance of Normal Position of Urethra, Am. J. Obst. & Gynec. 41:16 (Jan.) 1941.

It is certainly likeliest that some form of muscle training or reeducation, as suggested and practiced by Kegel,[13] could have considerable application and benefit in this group of cases. Furthermore, if it was used earlier in those patients who have had difficult deliveries, one might prevent the later onset of the incontinence entirely. In recent months my colleagues and I have used Kegel's technic in some cases in which other pelvic operations were not required and in those in which other pelvic operations, although indicated, were for one reason or another undesirable. The results have been sufficiently encouraging for continuation of its use.

SURGICAL PROCEDURES AND RESULTS

During the past five years the only surgical procedures for incontinence which my colleagues and I have used have been the Kelly operation, the modified Kelly and the Kennedy operation, except that four patients were treated by the Millin operation. Until the past year we have regarded the more extensive fascial sling operations as unnecessary, but the investigations of Marshall, Marchetti and Krantz [5] and of Millin and Read [1] have altered our thinking somewhat so that we are resorting to their procedures or some modification of them oftener, especially if the patients have had one or more plastic operations on the vesical neck for incontinence.

Table 1.—*Kelly Operation for Incontinence*

Result	Cases	Percentage
Poor	23	10
Some improvement	12	5
Continent on dismissal or on later report	192	85

The Kelly [11] operation is a simple procedure and can be easily performed alone or in combination with vaginal plastic operations. Its simplicity is a distinct advantage and no doubt is the reason it is most frequently used in preference to other procedures. This operation as described by Kelly [11] consists of insertion of one or two mattress sutures so placed that they will tighten the muscle layer in the vesical neck and posterior third of the urethra. If the incontinence is more than moderate, most gynecologists do a little more suturing than that described by Kelly and often speak of it as a modified Kelly operation.

The regular Kelly operation (table 1) was used on 227 patients for varying degrees of incontinence, but only 10 of these had incontinence of more than grade 2 on a basis of 1 to 4. Twenty-three patients (10 per cent) had a poor result; 85 per cent were completely relieved at the time of dismissal or were reported by letter six months or more later to be cured of their incontinence and to be voiding normally; 5 per cent were improved only. Repair of cystocele was performed in 66 per cent, and a vaginal hysterectomy or removal of a cervical stump was done in 48 per cent of the patients.

A Kelly operation (table 2) was done as a secondary operation for incontinence on 21 patients who had undergone some previous similar operation. In this group, the poor results were somewhat higher, being 14 per cent, but the good results were 76 per cent, and 10 per cent reported improvement only.

A modified Kelly operation (table 3) was performed on 110 patients. The poor results here involved only six patients (6 per cent), and the good results at the time of dismissal or report six months later were 87 per cent. There were only eight patients (7 per cent) who were improved only. In this group 78 per cent had cystocele operations, and in 54 per cent a vaginal hysterectomy was also done.

Table 2.—*Kelly Operation as a Secondary Procedure*

Result	Cases	Percentage
Poor	3	14
Some improvement	2	10
Continent on dismissal or on later report	16	76

Table 3.—*Modified Kelly Operation for Incontinence*

Result	Cases	Percentage
Poor	6	6
Some improvement	8	7
Continent on dismissal or on later report	96	87

The Kennedy operation is also a plastic operation on the vesical neck and urethra which is performed through the vaginal approach and is a more extensive operation than either a Kelly or modified Kelly procedure. In 1942 I [14] reported on 26 of these operations, which were performed in conjunction with vaginal hysterectomy in almost all instances. The results were excellent. During the five year period covered by the present report, this method of repair has been used more frequently and less selectively than before. It was performed in 179 patients (table 4). There were 7 per cent poor results; that is, the patients were no different than they were before operation. However, 85 per cent were cured at the time of dismissal or reported six months or more later that they were completely relieved of their incontinence. Only 8 per cent were reported as improved. Here also, cystoceles were repaired in 80 per cent, and vaginal hysterectomy was performed in 59 per cent.

Table 4.—*Kennedy Operation for Incontinence*

Result	Cases	Percentage
Poor	12	7
Some improvement	14	8
Continent on dismissal or on later report	153	85

Table 5.—*Kennedy Operation as a Secondary Procedure*

Result	Cases	Percentage
Poor	8	30
Some improvement	6	22
Continent on dismissal or on later report	13	48

The Kennedy operation (table 5) was also done on 27 patients who had previously undergone some type of plastic operation for their incontinence, the results of which had been poor. The poor results for this technic were 30 per cent, and the good results as reported at dismissal or after six months were only 48 per cent. Those improved were 22 per cent.

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[13] Kegel, A. H.: Progressive Resistance Exercise in the Functional Restoration of the Perineal Muscles, Am. J. Obst. & Gynec. 56: 238 (Aug.) 1948.

[14] Counseller, V. S.: Urinary Incontinence in Women, Am. J. Obst. & Gynec. 45: 479 (March) 1943.

When one combines the results of the primary Kelly, Kennedy and modified Kelly operations (table 6), there were 8 per cent poor results, 86 per cent good results and 6 per cent with improvement.

The combined results of these same operations which were performed for incontinence after some previous type of plastic operation had given poor results (table 7) show that there were 22 per cent poor results and 57 per cent good results, while 21 per cent reported improvement.

There were four patients on whom the Millin fascial sling operation was performed. All these were totally incontinent before operation. Three were completely cured, and in one patient the result was poor. In this case the patient was continent for two weeks postoperatively until the fascia broke and the incontinence immediately returned.

When one reviews an extensive group of patients who have been surgically treated for urinary stress incontinence by the Kelly or Kennedy operations, which in substance combine most features of any or all plastic procedures for this condition, it becomes apparent that considerable thought to the selection of types of operations must be applied. This is especially true if the patients have had one or more previous surgical attempts for correction of the incontinence that have given poor results.

TABLE 6.—*Combined Results of Primary Operations*

Result	Kelly	Kennedy	Modified Kelly	No. of Cases	Percentage
Poor	23	12	6	41	8
Some improvement	12	14	8	34	6
Continent	192	153	96	441	86
	227	179	110	516	100

TABLE 7.—*Combined Results of Secondary Operations*

Result	Kelly	Kennedy	Modified Kelly	No. of Cases	Percentage
Poor	3	8	2	13	22
Some improvement	2	6	4	12	21
Continent	16	13	4	33	57
	21	27	10	58	100

The best analysis actually is comparison of the poor results of the primary Kelly, modified Kelly and the primary Kennedy operations with the Kennedy and the Kelly surgical procedures which are used in secondary operations. The routine primary Kelly operation has in this series poor results in 10 per cent, but if one adds to this those cases which show improvement, so classified because there is still some incontinence, unsatisfactory results total 15 per cent. The modified Kelly operation, which is somewhat more extensive, resulted poorly in only 6 per cent, or in 13 per cent if the group of cases are added that are listed as improved.

The Kennedy operation gives about the same results as the modified Kelly operation, principally because there is little difference in the technic between the two procedures. The poor results in the primary Kennedy operation are 1 per cent higher than in the primary modified Kelly operation, being 7 per cent. When the improved group is added, unsatisfactory results for the primary Kennedy operation occur in 15 per cent.

However, when one compares the results of these two methods when applied as secondary operations, considerable difference in results is immediately apparent, which I believe should be interpreted as meaning that the Kennedy operation has been used, in this group at least, in patients who have had more scarring and fixation of the vesical neck and should have been treated surgically by one of the more extensive suprapubic operations of fascial sling or Marshall suspension of the urethra and vesical neck. This is our plan now, and I am sure it will be in the future. The poor results for the Kelly operation when used as a secondary operation amount to 14 per cent, while those for the Kennedy operation when used after multiple operations amount to 30 per cent. The explanation for the low figure for the Kelly operation in the secondary operations is, I am sure, that the anatomy of the vesical neck appears more favorable for further simpler methods of repair.

In view of the high incidence of poor results in secondary operations for urinary stress incontinence, it would seem that suprapubic operations would be indicated oftener than they have been done in this series. Although there were only four patients who were treated for total urinary stress incontinence by the suprapubic approach, three were completely cured, and in the fourth the results were poor only after the fascia broke during the patient's convalescence.

CONCLUSIONS

Many patients who have urinary stress incontinence also have definite indications for surgical repair of cystocele and urethrocele, for vaginal hysterectomy, vaginal removal of the cervical stump or for other procedures for prolapse.

Vaginal plastic operations such as the Kelly, modified Kelly and Kennedy operations will give cures in approximately 85 per cent of the cases of incontinence. The selection of the surgical procedure should depend on the severity of incontinence.

When these vaginal plastic operations are used in cases in which multiple previous operations have been done for incontinence, the unsatisfactory results will be nearly 50 per cent as shown in our combined results.

A more careful selection of patients with recurring urinary stress incontinence must be done, and the patients should be treated perhaps by more extensive suprapubic operations if poor results are to be avoided.

Santiago Ramón y Cajal.—In 1899 Cajal was invited to give a series of three lectures on his work at the decennial celebration of Clark University. . . . He embarked for the United States accompanied by his wife. Garrison states that Cajal was a handsome figure, with the abstracted mien of a laboratory worker and that he was agreeably impressed by the American people. He was somewhat awed by the fast pace of life and considered a Spanish bullfight tame compared to the frenzy of the American populace during the Independence Day celebrations. —Robert Arthur James Haggar, M.D., The Life of Santiago Ramón y Cajal, *University of Western Ontario Medical Journal,* January 1951.

PITUITARY ADRENOCORTICOTROPIC HORMONE IN SEVERELY BURNED CHILDREN

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Any physician who is called on to treat a child who has just been severely burned finds that he has a number of difficult therapeutic problems before him. Initially, he must care for the burned area or areas. Following this, during the first few hours and sometimes up to several days, the problem of shock arises and, along with it, the rapid changes of intravascular physiology, as indicated by the changing hematocrit and plasma volume. An excellent monograph on the therapy of these and other problems in burned persons has been published by Harkins.[1] If the child survives these crucial days, the physician is then frequently confronted with the following problems: (1) marked pyrexia, (2) marked anorexia leading to weight loss and malnutrition, (3) marked irritability and emotional instability and (4) loss of body proteins from the burned areas.

The first three problems are related to each other and probably are synergistic in their effect on each other. The high fever of the patient undoubtedly interferes with the desire to eat food, which is so essential to maintain the proper nutritional state for skin grafting. The marked irritability so frequently observed is probably also related to the fever; this usually makes the nursing care quite difficult. The loss of body fluids and proteins from the burned areas potentiates a state of malnutrition, thus making skin grafting more difficult.

During a study made by us in which we were administering pituitary adrenocorticotropic hormone (ACTH) to patients with acute rheumatic fever,[2] we were impressed with the marked antipyretic effect of the hormone, the increase in appetite produced during its administration (frequently up to 3,000 calories per day) and the beneficial change in temperament created. These observations, in addition to those of Seifter,[3] in which he showed that pituitary adrenocorticotropic hormone decreased the membrane permeability of joint surfaces, led us to consider administering the hormone to severely burned children. We have given the hormone to two patients for periods of four and fifteen weeks respectively and to one patient for five days.

Case 1.—The first patient to receive pituitary adrenocorticotropic hormone therapy was a 7 year old girl who was severely burned on April 6, 1950 over her buttocks and lower extremities, as seen in figure 1. She had been febrile for four weeks, was extremely irritable and refused to eat. In order to maintain her caloric intake, she had to be fed through a gavage tube which she resisted strenuously. Numerous transfusions and intravenous fluid administrations were required. For two days during the fourth week of her illness she was given 20 mg. of pituitary adrenocorticotropic hormone; for the next three days 20 mg. of the hormone was administered every eight hours. Almost immediately her disposition changed to one of cooperativeness and pleasantness. As can be seen in figure 2, her temperature quickly dropped to normal and stayed there until the hormone was withheld, when it again became elevated. Concomitant with the administration of the hormone, she began to take food and fluids by mouth so that gavage and intravenous feedings could be stopped. One day after the substance was discontinued, she received her first skin grafts. Observation of the burned areas revealed no unusual changes attributable to the administration of the pituitary adrenocorticotropic hormone, and these grafts took well.

The result in this patient encouraged us to try the hormone again but over a longer period of time. This was done in two patients whose case histories follow.

Case 2.—The second child to receive pituitary adrenocorticotropic hormone was a 4 year old white boy who received severe burns when trapped in a burning house July 17, 1950. There were third degree burns of the posterior aspect of the arms, legs, trunk and buttocks and a portion of the face and neck, involving an estimated 50 per cent of the body surface as seen in figure 3. Plasma was administered and pressure dressings were applied to the burned areas. Large amounts of plasma sustained the patient during the first 24 hours during which time his axillary temperature rose to 106 F. He remained semicomatose and irrational for the first three days. The daily oral fluid intake varied from 200 to 500 cc. during the first four days, and parenteral fluids had to be given to meet his requirements. Administration of pituitary adrenocorticotropic hormone, 10 mg. every six hours, was started on the fifth hospital day. The temperature promptly dropped from 103 to 101 F., at which level it remained for the next three days. By the eighth hospital day, at which time he received 60 mg. of the hormone, the child's oral fluid intake had increased

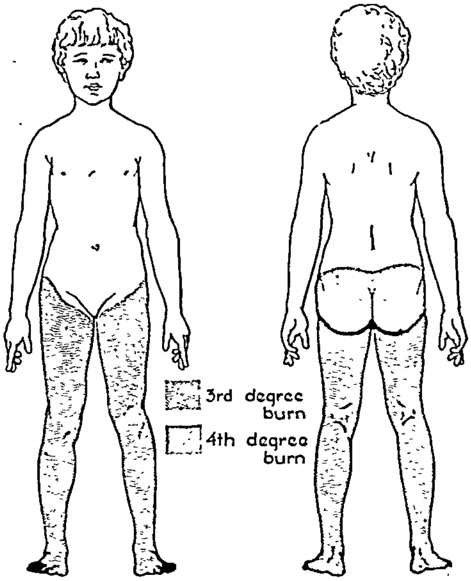

Fig. 1.—Patient C. W., a 7 year old girl who received severe third degree burns over the entire lower extremities and buttocks.

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[1] Harkins, H. W.: Treatment of Burns, Springfield, Ill., Charles C Thomas, Publisher, 1942.

[2] Adams, F. H.; Kelley, V. C.; Dwan, P. F., and Glick, D.: Response of the Serum Hyaluronidase Inhibitor and Mucoproteins to Adrenocorticotropic Hormone in Rheumatic States, Pediatrics, to be published.

[3] Seifter, J.; Baeder, D. H., and Begany, A. J.: Influence of Hyaluronidase and Steroids on Permeability of Synovial Membrane, Proc. Soc. Exper. Biol. & Med. 72: 277, 1949.

to 1,700 cc. and his food intake to 2,525 calories. Use of the hormone was discontinued on the ninth hospital day. The temperature promptly rose to 103.4 F. and the fluid and food intake dropped sharply. While the hormone was being administered the child remained fairly comfortable, oriented and cooperative. With its discontinuance and coincident with the elevation of temperature he again became disoriented, very restless, perspired heavily and appeared critically ill. Pituitary adrenocorticotropic hormone administration was started again on the twelfth hospital day, and again the patient's temperature promptly dropped to near normal levels, his oral fluid and food intake increased and he became comfortable and cooperative. His temperature and caloric intake are illustrated in figure 4. At the time the dressings were first changed, 10 days after admission to the hospital, the burns appeared dirty and not ready for grafting. No frank infection was noted. Considerable necrotic tissue was still present by the twenty-third hospital day. By the thirty-eighth day the burns were clean and granulating. The first skin grafting was done on the forty-third hospital day, at which time autografts from the patient's abdomen were placed on his right forearm and hand, and a homograft obtained from his mother was placed on his right upper arm. Further grafting was done on the fifty-third and the sixty-sixth hospital days. Although pituitary adrenocorticotropic hormone was administered during most of this time there was no apparent interference with the take and healing of the grafts. The dosage of the hormone was 40 mg. per day from the twelfth through the twenty-first day, 20 mg. per day from the twenty-second through the thirtieth day with three exceptions and none from the thirty-first through the forty-second day. Administration of the hormone was resumed on the forty-third day and carried on until final discontinuance on the hundredth day. The caloric intake gradually decreased from the high early levels of 2,800 calories to an average of 1,400 calories per day during the remainder of the time he received the hormone. A typical moon facies developed due to adrenal stimulation after about three weeks of therapy, but no other complications were noted. Aureomycin was given prophylactically for about three months, and the child received numerous blood transfusions. The homologous skin graft did not slough as would be expected but rather was replaced gradually by the patient's own skin invading from the side.

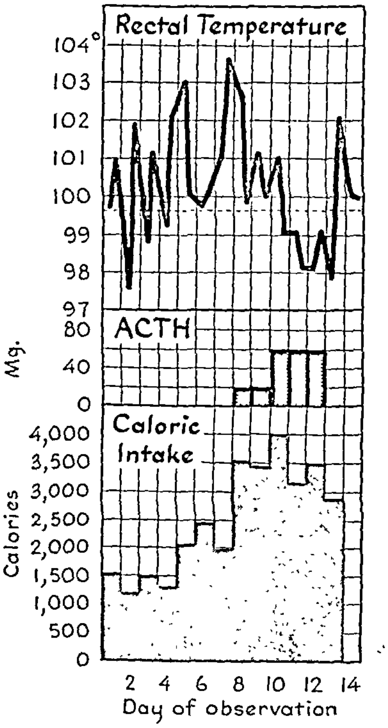

Fig. 2.—Persistence of fever in patient C. W. one month after being burned. Note effect of pituitary adrenocorticotropic hormone on the fever and caloric intake. Before the hormone was given, the caloric intake had been maintained by gavage feedings.

Case 3.—The third child to receive pituitary adrenocorticotropic hormone was an 11 year old boy who sustained third degree burns to almost the entire trunk and both arms as seen in figure 5. He was not as acutely or seriously ill as the preceding patient. The hormone was administered for the purpose of observing its effect on the caloric intake and on the take of the skin grafts. Figure 6 illustrates the effect of the hormone on the temperature and caloric intake. Skin grafting was done on the twenty-seventh, thirty-ninth, fiftieth and sixty-eighth days after the patient was burned. An estimated 60 per cent take occurred with the first graft and a 75 per cent take with the second graft. A pyocyaneous infection developed in the interval between the third and fourth grafts but cleared readily with acetic acid irrigations. Pituitary adrenocorticotropic hormone administration, 10 mg. every six hours, was started on the sixteenth day and continued through the twenty-third day. The dose was reduced to 10 mg. every eight hours for the next ten days, then to 10 mg. per day for the next four days. Following skin grafting on the thirty-ninth day the hormone was discontinued for two days but then started again and continued until the patient had received hormone therapy for a total of thirty days. The skin grafting results were considered to be entirely satisfactory. Aside from slight rounding of the face no deleterious effects from the use of the hormone were noted. Additional therapy consisted of

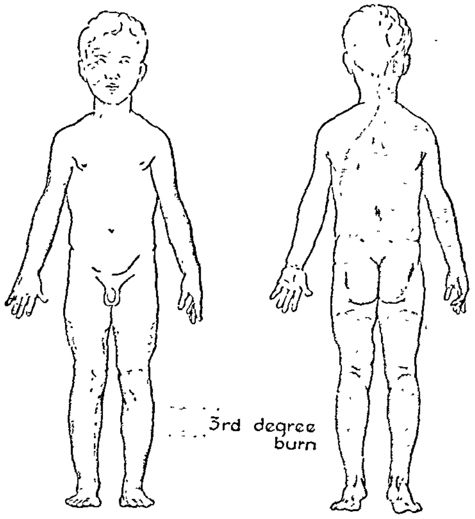

Fig. 3.—Patient T. S., a 4 year old boy who received third degree burns on the posterior aspect of the arms, legs, trunk and buttocks and a portion of the face and neck involving an estimated 50 per cent of the body surface.

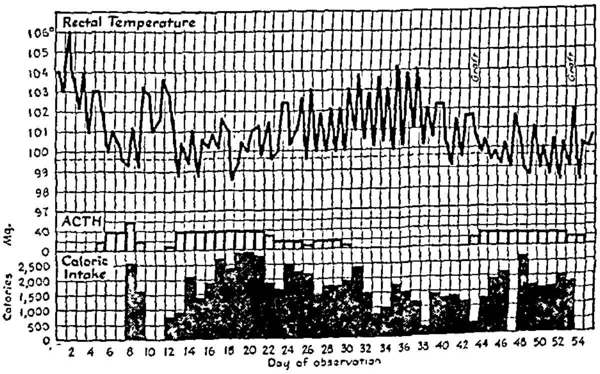

Fig. 4.—Effect of pituitary adrenocorticotropic hormone on the fever and caloric intake of patient T. S.

parenteral fluids in the first week of his illness and blood transfusions at intervals as indicated by hemoglobin determinations. Aureomycin was also given prophylactically.

COMMENT

There are several theoretical objections to the use of pituitary adrenocorticotropic hormone in patients who have been burned. 1. Some investigators have reported that it interferes with wound healing.[4] Others, however, have found no marked instances of interference with wound healing.[5] We have found no reports on its effect on the healing of burns. 2. The hormone has been reported to decrease the nitrogen balance.[6] This could theoretically interfere with the nutrition of a severely burned patient. However, since such a patient usually does not consume even the minimal amounts of food necessary for proper nutrition, he is already in negative nitrogen balance. The increased caloric intake accompanying the use of the hormone might reverse the negative nitrogen balance. 3. Theoretically the pituitary and adrenal glands are in a condition of stress caused by the burn, and further stimulation by the hormone could not be expected to produce beneficial effects. It is conceivable, however, that the adrenal response is not maximal and that further adrenal stimulation might be crucial in helping the patient over a critical period.

Since pituitary adrenocorticotropic hormone is known to have the effect of decreasing the membrane permeability of joint surfaces,[3] the mechanism involved might be of value in treating the severely burned child. Accordingly the hormone might be expected to decrease the rapid changes of hematocrit and plasma volumes during the acute phase of the disease and decrease the loss of fluids from the burned areas following the acute phase by altering the permeability of the vascular membranes.

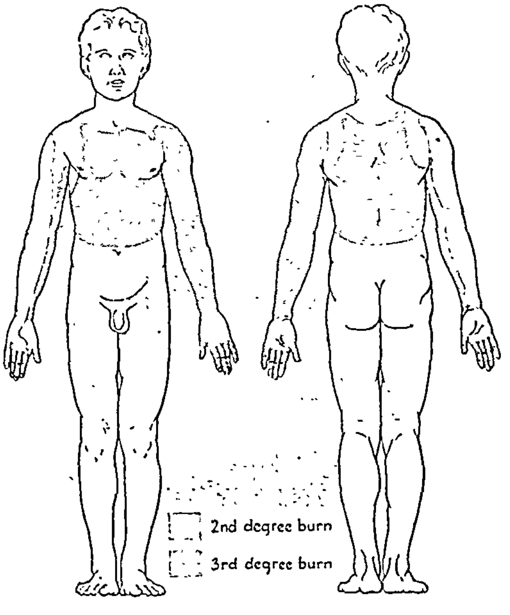

Fig. 5.—Patient M. M., an 11 year old boy, who sustained third degree burns to almost the entire trunk and both arms.

SUMMARY

Administration of pituitary adrenocorticotropic hormone (ACTH) to severely burned patients is a rational form of treatment, justifying further investigation. The hormone has been given to three patients who had severe burns of the body. One of the patients received the hormone for five days and two received the hormone for 30 and 100 days respectively. Administration of the substance produced a decrease in the fever, an increase in the caloric intake and an improvement in the emotional status of the patients. Its administration to the three patients did not interfere with wound healing or the take of the skin grafts.

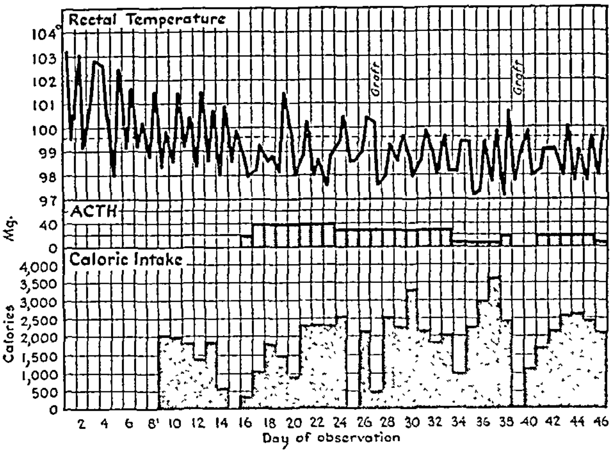

Fig. 6.—Effect of pituitary adrenocorticotropic hormone on the fever in patient M. M. The caloric intake was good before the hormone was started.

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5. Slocumb, C. H.; Polley, H. F.; Hench, P. S., and Kendall, E. C.: Effect of Cortisone and ACTH on Patients with Rheumatoid Arthritis, Proc. Staff Meet., Mayo Clin. **25**: 476, 1950. Cole, J. W.; Orbison, J. L.; Holden, W. D.; Hancock, T.; Lindsay, J. L.; Ankeney, J. L., and Hubay, C. A.: A Histological Study of Wound Healing and Its Relationship to Cortisone and Serum Antihyaluronidase, read before the Clinical Congress, American College of Surgeons, Boston, Oct. 23-27, 1950.

6. Mote, J. R.: Proceedings of the First Clinical ACTH Conference, Philadelphia, The Blakiston Company, 1950.

Continuous Medical Education.—The medical schools certainly cannot be all things to all people and I believe we are fooling ourselves if we think that the conventional four-year curriculum will result in a "compleat" physician. It is my opinion that we must now think of the "forty-year educational experience," only the first four years of which are spent in continuous residence in the school of medicine. These first four years must be designed to provide the physician with a basic foundation—principles, if you will—on which he may continue to build during the remainder of his professional life. I am much more interested in seeing that a medical student understand the basic action of a particular drug than that he be familiar with which drug company sells what brand. If the student has the idea that he has only four years in which to learn all of the things that will make him a finished physician, he is inevitably going to seek practicality at the expense of a firm and strong scientific foundation. If, on the other hand, he can be indoctrinated with the idea of continuing medical education, it will be much easier for him to understand the need for basic physiology, pharmacology, biochemistry, etc. —Franklin D. Murphy, M.D., The Concept of Continuation Education in Medicine, *California Medicine*, February 1951.

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Water-Soluble Chlorophyll Derivatives.—Chloresium (Rystan).—Water-soluble derivatives of chlorophyll consist chiefly of the copper complex of the sodium and potassium salts of saponified chlorophyll.

Actions and Uses.—A mixture of the water-soluble derivatives of chlorophyll is employed as a bland, soothing, nonirritating preparation for topical application. A solution or ointment is used for deodorization and relief of itching in wounds, ulcers, burns and dermatoses. It does not exert a significant disinfectant action and the mechanism of its deodorant effect on foul smelling chronic lesions is not clear. Such lesions, which are due primarily to chronic infection, may require surgical intervention and the use of anti-infective agents. Water-soluble chlorophyll derivatives may aid in producing a clean granulating wound base and a condition suitable for the normal repair of tissues. Conclusive evidence is lacking that chlorophyll derivatives stimulate granulation or epithelialization beyond the normal rate of healing, or that such derivatives are more effective than other agents for that purpose.

Dosage.—A solution containing 0.2 per cent water-soluble chlorophyll derivatives is applied topically to the affected areas once, or several times daily, as desired.

An ointment containing 0.5 per cent may be spread over affected areas and covered with fine-mesh gauze or other dressing. Applications are repeated at each change of dressing.

Tests and Standards.—

Physical Properties: Water-soluble chlorophyll derivatives present as potassium and sodium salts occur as a blue-black glistening powder having an amine-like odor. They are freely soluble in water, slightly soluble in alcohol and chloroform, and very slightly soluble in ether. A 1 per cent solution is dark green and has a pH between 9.5 and 10.2.

Identity Tests: Transfer about 0.5 Gm. of the water-soluble chlorophyll derivatives to a crucible and char them. Add about 1 ml. of sulfuric acid and heat to a dull red heat. Cool, add another 1 ml. portion of sulfuric acid and repeat the heating. Cool the crucible. Heat the residue on a steam bath in 10 ml. of water containing 1 ml. of diluted hydrochloric acid. Saturate the solution obtained with hydrogen sulfide and filter the resulting mixture. Save the filtrate. Heat the precipitate in diluted nitric acid: a light blue solution forms, which turns deep blue on addition of excess ammonia T.S. *(presence of copper).*

Boil the filtrate to remove the hydrogen sulfide, make it slightly alkaline with ammonia T.S. and again saturate it with hydrogen sulfide. Filter the mixture, save the filtrate, dissolve the black precipitate in about 2 ml. of nitric acid, heat the solution on a steam bath and dilute it to about 10 ml. with water. Add several drops of ammonium thiocyanate T.S.: a deep red solution forms *(presence of iron).*

Acidify the filtrate with diluted nitric acid, evaporate to dryness and carefully ignite to remove the ammonium salts. Dissolve the residue in about 5 ml. of water and acidify the solution with hydrochloric acid. By means of a platinum wire transfer a drop of the solution to a nonluminous flame: an intense yellow color is imparted to the flame *(presence of sodium).* Repeat the flame test observing the results through a cobalt blue glass: a reddish-violet coloration appears *(presence of potassium).*

A 0.001 per cent solution, prepared as directed in the assay, exhibits absorption maxima at approximately 4050 Å [specific absorbancy, E(1%, 1 cm.), is tentatively given the value of 565] and 6300 Å. The ratio of the optical densities at 4050 and 6300 Å is between 3.4 and 3.9.

Purity Tests: Dry about 1 Gm. of water-soluble chlorophyll derivatives at 105° for 4 hours: the loss in weight is not more than 4 per cent.

Char about 0.5 Gm. of water-soluble chlorophyll derivatives, accurately weighed, over a low flame. Cool the charred mass, cautiously add about 1 ml. of sulfuric acid and heat to a dull red heat. Cool and repeat the addition of 1 ml. of sulfuric acid and continue ignition until no carbon remains: the amount of residue is about 29 per cent.

Assay: Transfer 0.1 Gm. of dry water-soluble chlorophyll derivatives to a 100 ml. volumetric flask and fill to volume with phosphate buffer of pH 7.5 (21 volumes of 0.15 M Na_2HPO_4 and 4 volumes of 0.15 M KH_2PO_4). Mix the solution thoroughly and transfer exactly 10 ml. of the solution to a second 100 ml. volumetric flask and dilute to volume with the buffer. Repeat the 10 to 100 dilution with the buffer. Determine the optical density of the final solution (0.001%) at 4050 Å with a spectrophotometer. Mg. of water-soluble chlorophyll derivatives present per ml. of solution = optical density at 4050 Å ÷ 56.5. The amount of water-soluble chlorophyll derivatives is not less than 90.0 per cent.

Dosage Forms of Water-Soluble Chlorophyll Derivatives

OINTMENT.—*Identity Tests:* The solution, as prepared for assay, responds to the spectrophotometric identity tests listed in the monograph for Water-Soluble Chlorophyll Derivatives.

Assay: Transfer a quantity of the ointment equivalent to 20 mg. of water-soluble chlorophyll derivatives to a 100 ml. volumetric flask and add about 50 ml. of phosphate buffer of pH 7.5 (21 volumes of 0.15 M Na_2HPO_4 and 4 volumes of 0.15 M KH_2PO_4). Shake the solution until the ointment has completely dissolved, then fill to volume with the buffer and mix thoroughly. Transfer exactly 5 ml. of the solution to a second 100 ml. volumetric flask, fill to volume and mix thoroughly. Determine the optical density on the spectrophotometer at 4050 Å. Mg. of water-soluble chlorophyll derivatives present per ml. of solution = optical density at 4050 Å ÷ 56.5. The amount present is not less than 90.0 nor more than 110.0 per cent of the labeled amount.

SOLUTION *(Plain). Identity Tests:* The solution, as prepared for assay, responds to the spectrophotometric identity tests listed in the monograph for Water-Soluble Chlorophyll Derivatives.

Assay: Transfer a quantity of the solution equivalent to 20 mg. of water-soluble chlorophyll derivatives to a 100 ml. volumetric flask, fill to volume with phosphate buffer of pH 7.5 (21 volumes of 0.15 M Na_2HPO_4 and 4 volumes of 0.15 M KH_2PO_4) and mix thoroughly. Proceed as directed in the assay of the ointment starting with, "Transfer exactly 5 ml. of the solution to a second 100 ml. volumetric flask . . ." The amount present is not less than 90.0 nor more than 110.0 per cent of the labeled amount.

Ointment Chloresium 0.5%: 28.35 Gm., 113.4 Gm. and 454 Gm. jars. An ointment containing 5 mg. of water-soluble chlorophyll derivatives in each Gm. of water miscible base Rystan Company, Inc., Mount Vernon, N. Y.

Solution Chloresium 0.2%: 59.14 cc., 236.5 cc. and 946.3 cc. bottles: A solution containing 2 mg. of water-soluble chlorophyll derivatives in each cc. (U. S. Patent 2,120,667 and 2,434,649. U. S. Trademark 408,787). Rystan Company, Inc. Mount Vernon, N. Y.

Nicotinamide-U.S.P. (See New and Nonofficial Remedies 1950 page 482).

Tablets Niacinamide: 50 mg. and 100 mg. Physicians' Drug and Supply Company, Philadelphia, Penn.

Pertussis Vaccine-U.S.P. (See New and Nonofficial Remedies 1950, page 447).

Pertussis Vaccine: 20 cc. vials (five immunizations: three injections of 1.0 cc., 1.5 cc. and 1.5 cc.). 20,000 million *H. pertussis* in each cc. Preserved with thimerosal 1:10,000. Pitman-Moore Company, Indianapolis, Ind.

Sodium Ascorbate Injection-U.S.P. (See New and Nonofficial Remedies 1950, page 472).

Solution Sodium Ascorbate: 2 cc. and 5 cc. ampuls. A sterile aqueous solution containing sodium ascorbate equivalent to 50 mg. and 100 mg., respectively, of ascorbic acid in each cc. Preserved with 0.5 per cent chlorobutanol and 0.1 per cent sodium bisulfite. Gold Leaf Pharmacal Company, Inc., New Rochelle, N. Y.

Pertussis Vaccine, Alum Precipitated-U.S.P. (See New and Nonofficial Remedies 1950, page 448).

Pertussis Vaccine, Alum Precipitated: 5 cc. vials (five immunizations). 40,000 million *H. pertussis* in each cc. Preserved with thimerosal 1:7,500. Pitman-Moore Company, Indianapolis, Ind.

Pyridoxine Hydrochloride (See New and Nonofficial Remedies 1950, page 485).

Tablets Pyridoxine Hydrochloride: 25 mg. and 50 mg. U. S. Vitamin Corporation, New York, N. Y.

Secobarbital Sodium (See New and Nonofficial Remedies 1950, page 406).

Pulvules Seconal Sodium: 32 mg. Eli Lilly and Company, Indianapolis, Ind.

COUNCIL ON FOODS AND NUTRITION

The Council has authorized the publication of the following report. James R. Wilson, M.D., *Secretary.*

FROZEN ORANGE JUICE CONCENTRATE

The development of new techniques of food preservation has made available to the public a wide variety of frozen concentrated fruit juices conveniently packaged for family use.

Perhaps the most popular of these products is frozen concentrated orange juice. Since its introduction in 1947, consumption has steadily mounted as evidenced by the fact that approximately 35 per cent of all frozen food sales (exclusive of ice cream) is devoted to frozen concentrated orange juice. It is apparent, therefore, that this product is of sufficient public health importance to warrant a report by the Council on Foods and Nutrition.

The demand for orange and other citrus fruit juices is perhaps attributable largely to the public's awareness of the nutritive value of these foods, particularly their vitamin C potency. Although this is commendable, it has diverted attention away from many other excellent natural sources of this vitamin. Among these are such plentiful and readily available edibles as potatoes, tomatoes, various greens, raw cabbage, green peppers, strawberries and cantaloupe. These foods, as well as the citrus products, together with those other foods that contribute less significantly, deserve consideration in all instances having to do with the maintenance of normal daily intakes of vitamin C. Although this report is concerned entirely with orange juice as a source of this essential nutrient, it is not the intent of the Council on Foods and Nutrition to minimize the importance of other foods of high vitamin C content.

A number of pertinent observations have been made concerning factors that influence the vitamin C content of fresh oranges, all of which have a bearing on the nutritive value of the frozen concentrated juice. For example, studies indicate that the vitamin C content of fresh oranges may show considerable variation. This is due in part to seasonal influences. In general, fruit picked in midseason tends to be higher in vitamin C content than does that picked early or late in the season. Other factors, including variety of fruit, degree of ripeness and condition of the soil, also significantly affect the vitamin C content of the fresh fruit.

In this connection, it is worthy of note that in order to insure a high vitamin C content in the concentrated product, it is essential that fresh oranges of good quality picked at the proper time be used.

It would appear, then, from studies made to date, that frozen concentrated orange juice, properly processed under low temperature evaporation may be an excellent and dependable source of vitamin C.

The following considerations concerning frozen concentrated orange juice have led the Council on Foods and Nutrition to consider brands of this product for acceptance and, when accepted, to bear the Council's Seal of Acceptance.

VITAMIN CONTENT

As stated above, frozen orange juice concentrate is a reliable source of vitamin C when fruit of high nutritive quality is used in processing. Moreover, only negligible amounts of the original vitamin C content of the fresh fruit are lost if properly processed. In fact, it is reliably estimated that approximately 98 per cent of the vitamin C content of the fresh fruit may be retained in the frozen concentrated juice when modern acceptable methods are used.

VITAMIN RETENTION

When held in storage at the freezing point, or below, there is practically no loss of vitamin C.

The danger of vitamin C loss is most likely to occur as a result of improper handling or storage in the home. For example, if, after reconstituting, the juice is allowed to stand in open containers at room temperature, appreciable losses will occur. However, if the reconstituted juice is placed in the refrigerator at 40° F., vitamin C losses will be negligible. Ideally, the juice should be consumed as soon as possible after reconstituting to obtain maximum vitamin C values.

PALATIBILITY AND COLOR

In general, the flavor of frozen concentrated orange juice is excellent. However, the flavor tends to vary owing largely to natural variations in the sugar-acid ratio. It is also influenced by the peel oil content. On the whole, however, the flavor of the concentrated product corresponds favorably with that of fresh orange juice. Thus, orange juice concentrate is well accepted from the standpoint of its taste or flavor.

Color will vary appreciably from batch to batch. Color variation, however, has no effect on the vitamin C content.

USEFULNESS

Concentrated frozen orange juice may be used in all instances wherein there is need for maintaining or increasing the daily intake of vitamin C. In fact, it may be considered as the nutritive equal of fresh orange juice. Thus, it will meet the need for vitamin C intake in the diets of all persons, including infants.

It should be stated that Council acceptance of this product has been contingent on the manufacturer's fulfilment of certain requirements, the most important being:

1. That the product contain 40 mg. of vitamin C per 100 ml. (about 3⅓ oz.) of juice at the time of packing and that this represents retention of the ascorbic acid present in the original fruit—i. e., attaining this level through the addition of pure ascorbic acid is unacceptable to the Council.

2. That the packer of an accepted juice demonstrate that consistently high levels of vitamin C are maintained, and that evidence of this be furnished to the Council by means of daily laboratory reports indicating the vitamin C content of each day's pack during the processing season.

3. That all advertising claims for an accepted brand be proved in a manner acceptable to the Council on Foods and Nutrition.

There are at present three brands of frozen concentrated orange juice which have fulfilled the requirements of the Council and are eligible to display its Seal of Acceptance. They are (1) Birds Eye brand, packed by the Birds Eye-Snider Division of the General Foods Corporation, (2) Donald Duck brand, packed by Florida Citrus Canners Cooperative, and (3) Priceless brand packed by Florida Citrus Canners Cooperative.

It is perhaps pertinent to refer in this report to a marketing practice that may mislead the consumer. This involves the display of imitation orange juice of distinctly inferior nutritive value in containers similar to those which are used for real orange juice. Imitation orange juice generally consists essentially of sweetened water colored and flavored to resemble natural orange juice. Sometimes vitamin C is added. The consumer should exercise caution when purchasing orange juice to make sure that these nutritionally inferior products will not be mistakenly bought in place of natural orange juice.

SUMMARY

In view of the several considerations here recounted, it is the opinion of the Council that frozen concentrated orange juice is eligible for acceptance and use of the Council's seal when not less than 40 mg. of vitamin C is retained in each 100 ml. of reconstituted juice and when advertising claims are proved.

Furthermore, evidence submitted to the Council indicates that the frozen concentrated product can be as valuable from the standpoint of its nutritive content as is fresh orange juice. The Council also holds that frozen concentrated orange juice made from properly selected and prepared fruit is a dependable source of vitamin C and that it may be useful in the diets of persons of all ages.

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AVIATION MEDICINE

Twenty-five years ago the airplane was an unreliable machine capable of flying 70 miles per hour and with a ceiling of 12,000 feet. Today, some airplanes have 5,000 horse power engines capable of speeds of more than 700 miles per hour and of operating above an altitude of 45,000 feet. The medical problems of military aviation that have arisen with the development of the airplane have been ably discussed by Brigadier Gen. Edward J. Kendricks in his Kober Lecture delivered at Georgetown University, March 28. Military medicine is definitely a part of worldwide medicine. That military and civilian medicine are one is shown by the fact that 97 per cent of the medical officers on duty with the United States Army in World War I were civilian physicians in uniform. A further indication is the recent creation of a Section on Military Medicine by the House of Delegates of the American Medical Association. The first indication that aviation medicine was destined to be a new medical specialty came in 1914, when it was recognized that in exploring a new environment man was encountering new physical, mental and physiological hazards. At first, these problems appeared to be purely medical, but it was soon learned that more than medicine was involved and that a team should be developed to deal with the complex problem of keeping the aviator, the airplane and its power plant as efficient and safe as possible. To this team, comprised of engineers, doctors and scientists, it became evident that aviators must be carefully selected and classified in a way to indicate their ability to function at high altitudes, as well as to fly at night. There must be also constant observation of fliers for detection of evidence of fatigue, fear of flying, staleness and increased recklessness. In 1917 this nation established a medical research board which was directed to evaluate ways and means of caring for fliers. Thus, a new medical specialty was launched, and in 1919 the first school for Flight Surgeons became a part of the medical research laboratory which then was at Mineola, Long Island.

From the first, advances in aeronautics greatly influenced the trend of aviation medicine. The development of more powerful airplanes resulted in the medical consideration of gravitational force imposed on the pilot during curvilinear flying and escape from high speed aircraft. When airplanes were developed that could reach an altitude of 25,000 feet, a serious aeromedical problem arose. The reduced density has two serious effects on the body, producing aeroembolism and anoxia. It was found that the probability of a flier being incapacitated by aeroembolism, or "bends," at 25,000 feet after an hour's exposure was about one in 10, while at 40,000 feet with only 20 minutes' exposure the probability increased to 9 in 10. Above 50,000 feet man can tolerate only very short exposure without seriously suffering from aeroembolism. At 63,000 feet human blood boils at body temperature. At these extreme altitudes man's useful consciousness is limited to a very few seconds.

All operational aircraft capable of sustained flight above 20,000 feet must have cabin pressurization to protect the occupants against hypoxia and decompression sickness. Cabin pressurization greatly reduced the oxygen problems, but it presented a new danger, that of explosive decompression, or a sudden loss of cabin pressure resulting from either mechanical failure or enemy action. The two most significant factors associated with decompression are the expansion of gases within the human body and the time under which the decompression takes place. For flying up to 40,000 feet with the cabin altitude around 10,000 feet, this relative expansion of internal body gases is fivefold. The time in which decompression takes place depends on the size of the hole caused by structural failure in relation to the volume of the cabin pressure itself. In general, explosive decompression, involving considerable expansion of internal body gases, can be tolerated safely if the time of decompression is as much as several seconds. In commercial aircraft and pressurized bombers, the cabin volume is relatively large in relation to the probable blowout area, so that the danger of explosive decompression is small. In fighter aircraft, where the hole probably would be great in relation to the cabin volume, decompression would take place in a fraction of a second and sudden expansion of body gases would cause serious internal injuries. Under these conditions the best preventive is either a reduction of cabin pressure differential or the use of protective clothing that restrains the chest wall within its extensible limits.

Speed, as such, has no effect on man if he flies in a straight line and is protected from wind blast and friction; however, the forces involved in attaining or suddenly losing these speeds as well as the G-forces resulting from turns at high speed may have very serious effects. When a pilot is exposed to 2-Gs, he is exposed to a force doubling his weight, and 20-Gs would mean exposure to a force 20 times his weight. The direction in which the force is applied is of great importance. The average pilot can tolerate 4 to 5-Gs for 10 to 15 seconds while flying in the conventional sitting position, and he can increase G tolerance by slightly raising his legs or straining. The G suit will increase tolerance to positive G by a factor of 1 to 1.2-G. It is anticipated that the newer type G suit will afford 2.8 to 3-G protection, thus, affording G protection adapted to higher performance of aircraft.

The pilot relies on vision to avoid dangerous aircraft attitudes and flight obstacles as well as for identifying his target. The target or obstacle must be identified at great distances, otherwise, with present high speed, the target point will be passed and, in combat, if there is delay in recognition and proper reaction, the airplane may not be turned rapidly enough to bring it into firing position.

Aviation medicine today is concerned also with keeping the pilot cool. High speed aircraft become heated by the friction impact of air on their surfaces. When an airplane travels at 650 miles per hour at sea level the cockpit temperature may be as much as 70 F. higher than the outside temperature. In the newer jet fighters, equipped with air-conditioning systems, a pilot can fly over the North Pole at altitude wearing only a summer flying suit; but should he be forced down his chances of survival in this garment are few. A new system to protect the pilot from such heat has been designed to adjust automatically for wide changes of cabin temperature.

When jet aircraft were introduced, German researchers attributed certain sudden pilot deaths to ultrasonic vibrations. By 1948 our own researchers had accumulated data on ultrasonic components of sound fields generated by jet and rocket engines that make it unlikely that they are serious hazards to man. Less than 0.5 per cent of the acoustic energy present in these frequencies is absorbed from the air by the human body. However, unprotected exposure to this sound field for 30 minutes or more will produce a temporary hearing loss of 20 decibels or more and may with repeated exposure of long duration produce permanent hearing loss. Much study must still be done; however, for proper evaluation of the effects.

In the development of high speed aircraft, it became evident that at 400 to 600 miles per hour, the flyer could not bail out without being struck by some part of the airplane. Research produced an injection seat that shot the pilot upward above the tail piece of his plane, where of course, he is met by terrific wind blast, friction, tumbling and the necessity to descend safely to earth. With some modifications of the original design, this seat has been used safely by volunteers at speeds of more than 500 miles per hour and from altitudes above 40,000 feet. For altitudes above 50,000 feet the pilot must be enclosed in a kind of personal pressure cabin provided by a garment worn under other clothing which can be pressurized in an emergency.

Aviation medicine working in cooperation with engineers, physicists, biochemists, physiologists and other allied scientists has met many of the complex problems of military aviation. There are today about 800 physicians in the Air Force or Navy who have graduated from the Air Force School of Aviation Medicine or the Naval School of Aviation Medicine. Most of these flight surgeons are practicing aviation medicine with airmen in the field or on the carrier, where they live, eat and fly with the fliers. The flight surgeon checks their equipment for efficiency and continually indoctrinates the airman in its use. He watches over them for psychological and physical changes due to combat and emotional strain. With his knowledge of high altitude physiology and the hazards of high speed flight, he makes his choice and use of therapeutic agents. He is fully aware of limitations imposed by altitude on such every day conditions as the common cold and the effects of antihistaminics. The flight surgeon must not only be a good doctor, he must fully understand the requirements of military medicine. Something of the flight surgeon goes with every airplane over the target.

FROZEN FOODS

Since frozen foods are assuming a more important place in the American diet, accurate information on their nutritional value becomes increasingly important. Their growing popularity is indicated by the fact that in the short span of three years (1946 to 1949) the annual pack of frozen orange juice concentrate alone rose from 2,500,000 pounds to more than 134,000,000 pounds. Because of the public health significance of frozen orange juice, the Council on Foods and Nutrition has adopted the statement which appears on page 35 of this issue.

The quality of foods, whether frozen in home freezers or frozen commercially, depends on three basic factors: (1) selection, (2) shortness of the interval between harvesting and packing and (3) care in processing and storage. Selection for quality and nutritive value of fresh fruits and vegetables depends on such factors as variety, climate, sunlight and soil. Fine flavor and nutritive value often go hand in hand. Sherman early expressed the view that fruits when most highly prized for their flavor are usually richest in nutrient content. The retention of flavor as well as nutrient value is generally improved in direct proportion to the shortness of the time interval between harvesting and final packing. This is especially true in such vegetables as peas and string beans. The vitamin C content of spinach, for instance, may be reduced as much as one third if it is allowed to stand in boxes overnight,[1] and the vitamin C in freshly picked peas may be reduced 50 per cent in 24 to 48 hours.[2] Refrigeration helps to retard the loss of certain nutrients, such as ascorbic acid, when it is necessary to delay processing for any appreciable length of time.

Care in processing and storage involves the application of new information concerning processing and storage at low temperatures. Available evidence indicates that freezing does not materially alter the nutritional value of foods.[3] Freezing does not split meat proteins or denature them.[4] It does not significantly reduce the carotene content of various vegetables tested, including yellow corn, asparagus, lima beans, spinach, broccoli and peas.[5] Losses in the thiamine content of frozen foods are in general not great.

Much of the loss of the water-soluble vitamins and other water-soluble constituents of vegetables preserved by freezing, canning or dehydration occurs as the result of the preliminary blanching or precooking to which they are subjected. Blanching is done in order to inactivate enzymes, retard the subsequent loss of carotene and ascorbic acid during storage and to prevent the development of undesirable off-flavors. Blanching in water frequently reduces the ascorbic acid content of vegetables as much as 16 per cent.[6] Such losses tend to be minimized when the blanching time is shortened by the use of boiling water and the same water is used repeatedly.

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[1] Dehydration and Vitamin Stability, Nutrition Rev. **1**: 187 (April) 1943.

[2] Rose, M. S.: The Effect of Quick Freezing on the Nutritive Values of Foods, J. A. M. A. **114**: 1356 (April 6) 1940.

[3] Lee, F. A.: Nutritional Value of Frozen Foods, Nutrition Rev. **9**: 1 (Jan.) 1951.

[4] Smorodinter, I. A.: Chem. Abst. **38**: 6410, 1944.

[5] Fitzgerald, G. A., and Fellers, C. R.: Carotene and Ascorbic Acid Content of Fresh Market and Commercially Frozen Fruits and Vegetables, Food Research **3**: 109 (Jan.-April) 1938.

[6] King, C. G., and Tressler, D. K.: Proc. Conf. Food Inst. Food Technologists, 1940, p. 123.

The use of flowing steam may still further reduce the loss of soluble materials.[7]

Another important factor in the preservation of vitamins and flavor is the rate of freezing of the food. It has been stated that the satisfactory maintenance of flavor and vitamin content depends on the cooling of the center of the package to 0 F. in one and a half to two hours. Recent work, however, has demonstrated that this may be lengthened somewhat. Observers have found that even eight to 12 hours may be used for freezing without significant impairment.[8] This means the products frozen in home freezing cabinets can be as nutritious as those obtained by quick freezing. The freezing time should not be increased beyond 12 hours, however, because of deteriorative changes that may occur if the temperature is not dropped rapidly enough throughout the entire package.

Since frozen foods are often stored over long periods of time before being eaten, it also becomes important to know whether such storage reduces the nutritional value of the food. Storage at 0 F. seems quite satisfactory, at least when the storage period is a year or less. Losses become much greater if the temperature is allowed to rise to 10 F. or is allowed to fluctuate between 0 and 20 F. At these temperatures peas lose 50 per cent, beans 80 per cent, and strawberries 65 per cent of their original ascorbic acid in one year and show color deterioration.[3] Apparently storage at 0 F. or lower is necessary for satisfactory preservation of most foods over prolonged periods, although orange juice stored at temperatures between 8 and 12.2 F. for one and a half years showed no loss of vitamin C.[3] Only limited studies of the effect of storage on other vitamins have been made. No carotene was lost from 27 different vegetables stored at 0 F. for three months, although there was some evidence of loss after six months.[5] The thiamine content of snap beans was reported as reduced to 10 to 20 per cent after storage of six months at 6 F., but the thiamine content of pork was not influenced by temperatures from 0 to 20 F.[3] By way of comparison, dehydrated rutabagas and cabbages stored at room temperature for three to four months lost approximately 30 per cent of the ascorbic acid present at the beginning of the storage period, 70 to 80 per cent of the carotene and none of the thiamine.[9]

When frozen foods are selected, prepared and stored according to the best of currently available scientific knowledge, they can compare favorably in nutrient content and flavor with the fresh product.

THE DISTINGUISHED SERVICE AWARD

One of the highest honors, the American Medical Association can bestow on its Fellows, the Distinguished Service Award, will be presented in Atlantic City at the Inaugural Meeting on Tuesday, June 12, 1951. This award "for meritorious services in the science and art of medicine" has been made each year since 1938, when it was presented to Dr. Rudolph Matas of New Orleans.

Any Fellow of the American Medical Association may submit nominations, which should be sent, together with a record of the scientific and other attainments of the nominees, to Dr. George F. Lull, Secretary of the Association, 535 North Dearborn St., Chicago 10, who will refer them to the Committee on Distinguished Service Award. After consideration of all nominations received, the Committee will submit five names to the Board of Trustees and the Board will select three of the five for presentation to the House of Delegates at its first meeting in Atlantic City. The House of Delegates makes the final selection by official ballot.

The Distinguished Service Medal has been awarded to 13 illustrious men of American medicine, in whose selection the Association has done honor to itself as well as to the men awarded. The list of recipients includes, besides Dr. Matas, Dr. James B. Herrick of Chicago, Dr. Chevalier Jackson of Philadelphia, Dr. James Ewing of New York, Dr. Ludvig Hektoen of Chicago, Dr. Elliott P. Joslin of Boston, Dr. George Dock of Pasadena, Calif., Dr. George R. Minot of Boston, Dr. Anton J. Carlson of Chicago, Dr. Henry A. Christian of Boston, Dr. Isaac A. Abt of Chicago, Dr. Seale Harris of Birmingham, Ala., and Dr. Evarts A. Graham of St. Louis.

New nominations should be in the office of the Secretary of the Association not later than May 25, 1951.

SPHINCTEROTOMY FOR PANCREATIC DISEASE

Frequently the pancreatic duct drains into the ampulla of Vater and shares a passageway with the common bile duct into the intestine. In such instances an obstruction at the duodenal orifice could cause pancreatitis by a reflux of bile into the pancreas. In 1919 Archibald [1] reported that this situation could be produced by a spasm of the sphincter of Oddi and recommended sphincterotomy as the treatment for chronic pancreatitis. By inducing contraction of this muscle during cholangiographic study of such cases, Doubilet and Mulholland [2] have demonstrated a regurgitation of the radiopaque material into the pancreatic duct. When this phenomenon is present, the sphincteral muscle is clipped by a specially designed sphincterotome, which is manipulated through an opening in the common duct. There is danger of the surrounding duodenal musculature being cut with the scalpel if these muscle fibers are incised through a transduodenal exposure of the ampulla. A cholecystectomy eliminates any residual function of the gallbladder. The results have been uniformly satisfactory.

These authors [3] have recently reported that symptoms in calcification of the pancreas have been relieved in this same manner. The calcific deposits are a quiescent complication of chronic pancreatitis. The pain arises from the concurrent inflammatory changes in such a gland.

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7. Guerrant, N. B.; Vanich, M. G.; Fardig, O. B., and Ellenberger, H. A.: Effect of Duration and Temperature of Blanch on Vitamin Retention by Certain Vegetables, Indust. & Engin. Chem. **39**: 1000, 1947.

8. Lee, F. A.; Gortner, W. A., and Whitcombe, J.: Effect of Freezing Rate on Vegetables, Indust. & Engin. Chem. **38**: 341, 1946; Effect of Freezing Rate on Fruits, Food Technology **3**: 164, 1949. Lee, F. A., and Gortner, W. A.: Effect of Freezing Rate on Vegetables, Refrig. Engin. **57**: 148 and 184, 1949. Lee, F. A.; Brooks, R. F.; Pearson, A. M.; Miller, J. I., and Volz, F.: Effect of Freezing Rate on Meat, Food Research **15**: 8, 1950.

9. Tressler, D. K.; Moger, J. C., and Wheeler, K. A.: Losses of Vitamins Which May Occur During the Storage of Dehydrated Vegetables, Am. J. Pub. Health **33**: 975 (Aug.) 1943.

1. Archibald, E.: The Experimental Production of Pancreatitis in Animals as the Result of the Resistance of the Common Duct Sphincter, Surg., Gynec. & Obst. **28**: 529 (June) 1919.

2. Doubilet, H., and Mulholland, J. H.: The Surgical Treatment of Recurrent Acute Pancreatitis by Endocholedochal Sphincterotomy, Surg., Gynec. & Obst. **86**: 295 (March) 1948.

3. Doubilet, H., and Mulholland, J. H.: Surgical Treatment of Calcification of the Pancreas, Ann. Surg. **132**: 786 (Oct.) 1950.

ORGANIZATION SECTION

DEATH OF JEWEL F. WHELAN

Miss Jewel Whelan, who served 42 years in the editorial department of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and as secretary to the Board of Trustees, died on April 14 after a long illness due to a heart condition. Miss Whelan served as assistant to Dr. Morris Fishbein until his retirement on Dec. 1, 1949. She began her long and faithful service with the American Medical Association in 1909 as secretary to the late assistant editor Dr. E. E. Hyde; then, for 15 years, she was secretary to the late Dr. George H. Simmons until his retirement as editor of THE JOURNAL in 1924, at which time she took over the handling of the A. M. A. specialty journals. Miss Whelan's death is a distinct loss to the Association.

EMERGENCY MEDICAL SERVICE HAS NEW SECRETARY

Attorney C. Joseph Stetler recently was appointed Secretary of the American Medical Association Council on National Emergency Medical Service, succeeding Dr. Robert M. Hall, who returned to active duty with the Army. For the last 16 years Mr. Stetler has served with various government agencies. His most recent assignment was that of director of the Legislation and Opinions Service of the War Claims Commission in Washington.

MEDICAL LEGISLATION

FEDERAL

Federal Agency for Handicapped.—Senator Neely of West Virginia introduced S.1318, which would establish a federal agency for handicapped persons. Identical bills have been introduced in the House of Representatives by Representative Withrow of Wisconsin (H. R. 3747), by Representative Havenner of California (H. R. 3762) and by Representative Rhodes of Pennsylvania (H. R. 3769). This makes a total of eight identical bills in Congress proposing to set up a federal agency for handicapped persons. The proposed agency would have independent agency status but would be based in the Department of Labor for "housekeeping" purposes. The present Office of Vocational Rehabilitation located in the Federal Security Agency would be abolished and its functions transferred to the new agency. There would be several new programs developed: these were described briefly in a previous issue of THE JOURNAL under H. R. 3559.

Reorganization of Federal Agencies.—Representative Dawson of Illinois introduced H. R. 3686, proposing a reorganization of the Veterans' Administration in accordance with the recommendations of the Commission on Organization of the Executive Branch of the Government. The bill would reorganize the VA along the lines recommended in the Hoover Report.

Representative Dawson also introduced H. R. 3688, which would establish a federal department of health and consolidate certain hospital, medical and public health functions of the government under it. This bill is identical with several other bills previously reported.

Public Assistance.—H. R. 3768 was introduced by Representative Reed of New York. It would repeal provisions of the Social Security Act, which requires state plans for old age assistance, aid to dependent children, aid to the blind, and aid to the permanently and totally disabled, to restrict the use or disclosure of information concerning applicants and recipients to purposes directly connected with the administration of such plans. An identical bill, S. 1099, was introduced in the Senate some time ago and was previously reported in THE JOURNAL.

Survey of Sickness.—Senator Murray of Montana introduced S. 1328, which would provide for a survey of sickness in the United States. This bill is identical with H. R. 3339 (reported previously) except that this bill calls for a similar survey at four-year intervals.

STATE

Arizona

Bill Enacted.—H. 116 has become Chapter 119 of Laws of 1951. It authorizes the state board of education to accept federal funds for use in connection with the school lunch program.

California

Bills Introduced.—A. 71, to amend the Business and Professions Code, proposes regulations relating to the reinstatement of licenses by persons serving in the armed forces. A. 1210, to amend the Business and Professions Code relating to the practice of medicine, proposes that the provisions applicable to applications by United States commissioned medical officers shall also be applicable to applicants who were in the armed forces of the United States during the period from Dec. 7, 1941 to Dec. 31, 1946 and who were bona fide residents of California before entering medical school. A. 2672, to amend the Business and Professions Code, proposes that the words "diagnose" or "diagnosis" shall include any undertaking by any method, device or procedure whatsoever, and whether gratuitous or not, to ascertain or establish whether or not a person is suffering from any physical, mental or nervous disorder. The proposal would further provide, however, that the performance of psychological services on referral from a person licensed under the Business and Professions Code would not be a violation of the law. A. 2675, to amend the Business and Professions Code, would require applicants for the physicians' and surgeons' examination, who graduate from school after January 1, 1955, to present evidence of having completed a three-year resident course of college grade, including the subjects of physics, chemistry and biology, before commencing the study of medicine. A. 2678, to amend the Business and Professions Code, proposes that every physician who while in attendance on patients is intoxicated to such an extent as to impair his ability to conduct the practice authorized by his certificate shall be guilty of a misdemeanor. S. 1553, to amend the Insurance Code, proposes that nothing therein should be construed to authorize an insurer to furnish services of hospitals, nurses, or physicians and surgeons or in any manner to direct, participate in or control the selection of the hospital or physician and surgeon from whom the insured secures services. S. 1625, proposes the creation of a Board of Vocational Nurse Examiners and defines the practice of vocational nursing as the performance of services requiring those technical manual skills acquired by means of a course in an accredited school of vocational nursing or its equivalent practiced under the direction of a licensed physician or registered professional nurse.

Florida

Bills Introduced.—H. 141, proposes to make it unlawful for any person whose interest is adverse to an injured person or who is acting on behalf of anyone whose interest is adverse to an injured person to take or attempt to take any statement, written or oral, from such injured person or negotiate or attempt to negotiate a settlement of or attempt to obtain the execution of a release from liability on account of injuries sustained by such injured person while such injured person is a patient in any hospital, sanitarium or nursing home within fifteen days of the time such injuries were sustained. No statement taken in violation of the provisions of this proposal would be admissible in evidence or otherwise used in any manner in any civil action arising out of the injuries. Accepted from the proposal would be the taking of statements by law enforcement officers in the line of official duty. H. 194, proposes the enactment of a licensing law for chiropractic hospitals, sanatoria, or other related institutions.

Illinois

Bills Introduced.—H. 654, proposes the enactment of a hospital licensing law. S. 428, proposes regulations for the prevention and control of rabies.

Kansas

Bills Enacted.—H. 72, was approved March 28, 1951. It amends the law relating to non profit medical service corporations by setting up provisions relating to the establishment of reciprocity benefits which may be applicable to non-resident employees of corporations transacting business in Kansas. H. 235, was approved March 30, 1951. It amends the law relating to the disposition of unclaimed dead human bodies and the use of such bodies by the department of anatomy of the medical school of the university of Kansas.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

Massachusetts

Bills Introduced.—H. 2315, proposes the creation of a special commission to make a study relating to the sentencing, treatment and release of **female prisoners in the penal institutions** of the state under the control of the department of correction. H. 2324 (Appendix C), proposes the creation of a special commission to make an investigation of the advisability of **establishing a medical school** and a dental school under the jurisdiction of the trustees of the university of Massachusetts. H. 2402, proposes the establishment within the Department of Public Safety of a board for the regulation of **toxic substances** to make rules and regulations effecting the use, handling and distribution of toxic substances.

Michigan

Bills Introduced.—H. C. R. 39, proposes the creation of a legislative committee to investigate the **conditions in private hospitals** in the state which are not recognized by the American College of Physicians and Surgeons and to investigate conditions existing in connection with the practicing of non-licensed doctors in the state. H. C. R. 40, proposes the creation of a special committee to study the needs of the several county tuberculosis sanatoriums. H. 368, proposes an appropriation to the state tuberculosis sanatorium for the construction of a Southwestern Michigan **tuberculosis sanatorium** in the city of Kalamazoo. S. 217, proposes a number of amendments to the **chiropractic act**, the effect of which is to remove the existing limitations that a chiropractor can adjust by hand only. The proposal would permit chiropractors to perform any therapeutic measure included in the curricula of approved chiropractic schools or colleges with the specific exception of drug treatment and surgery wherein tissues are pierced or cut or severed. S. 222, proposes to authorize **non-profit medical care plans** to provide for services furnished by licensed and registered doctors of surgical chiropody. S. 268, proposes the creation of an advisory council to act in an advisory capacity to all state agencies dealing with **problems of the physically handicapped.** S. 269, proposes to require all **hospitals in the state to keep a permanent written case record** of each patient treated therein for at least six years. Such records should show all medical surgical and nursing services rendered, including laboratory and x-ray records, and should not be removed from the hospital except under court order. They could be inspected, however, by the patient's attending physician, executor, administrator or legal guardian or such other person or persons as are authorized by the patient to see such record. They would also be available in case of bona fide medical research work.

Bill Enacted.—S. R. 13, was adopted Feb. 5, 1951. It provides for the appointment of a special committee to study, investigate and report back to the legislature during the 1951 session relating to the feasibility of **disability insurance** for the state of Michigan.

Minnesota

Bills Introduced.—SCR 20, proposes the establishment of an Interim Commission to ascertain study and analyze all facts and matters relating to the **Youth Conservation** and Mental Health Programs of the state. S. 1516, proposes the creation of a commission to examine the existing laws of the state relating to **workmen's compensation** and to prepare, propose and recommend necessary revisions thereof.

Bill Enacted.—S. 780 has become Chapter 406 of the Laws of 1951. It creates an **Interim Commission on Alcoholism** to determine the extent and social impact of alcoholism and the presently available private and public facilities for the treatment of alcoholics in Minnesota.

Missouri

Bill Introduced.—H. 393, proposes to authorize the creation of **departments of health and welfare** in certain counties of the state.

New Jersey

Bills Introduced.—A. 711, proposes the creation of a **State Board of Examiners of Psychologists** and defines a psychologist as a person who (a) renders to individual clients or the general public for fees or personal profit, direct or indirect, any professional service requiring the application of recognized principles, methods and procedures of the science and profession of psychology; such as counseling, interviewing, administration and interpretation of statistically standardized tests of mental abilities and personality characteristics, for the purpose of psychological appraisal for the betterment of human welfare; or (b) for fees or personal profit, direct or indirect, applies such psychological techniques for purposes of reeducation, guidance or readjustment. Nothing in the proposal would be construed as permitting the licencee to practice medicine nor to use psychotherapy on nervous and mental patients without the collaboration of a properly qualified doctor of medicine. The proposal would also cover the licensing of psychological technicians. S. 304, proposes the creation of a **State college of medicine**, dentistry and veterinary medicine.

New York

Bills Enacted.—S. 726 has become Chapter 528 of the Laws of 1951. It creates a temporary commission to make a study of existing provisions of law relating to the **control of narcotics** and their use. S. 2138 has become Chapter 662 of the Laws of 1951. It provides regulations for the discovery and treatment of persons suffering from **tuberculosis.**

North Carolina

Bill Enacted.—S. 304 was ratified April 11, 1951. It provides regulations whereby any person who may otherwise validly make a will may, by will, **dispose of the whole or any part of his or her body** to a teaching institution, university, college, State Department of Health, legally licensed hospital or any other legally licensed hospital, agency or commission operating an eye bank, bone or cartilage bank, a blood bank or any other bank of a similar nature and kind designated for the rehabilitation of the maimed.

Ohio

Bill Introduced.—S. 299, proposes to make it unlawful to sell, barter, give or exchange **narcotic drugs** to any minor under the age of twenty-one years, except a physician or dentist in the regular course of his practice or a parent or guardian on order of a physician.

Oklahoma

Bills Introduced.—H. 511, proposes regulations for the creation of **County Boards of Health.** S. 211, proposes regulations creating a **Mental Health Board** and sets forth the duties of such Board.

Bill Enacted.—H. 198, was approved April 3, 1951. It authorizes the Boards of Chiropody, Chiropractic Examiners, Medical Examiners, Optometry Examiners and Osteopathic Examiners to make use of the injunctive process in enforcing the provisions of their respective acts, provided, however, that none of such boards may be permitted to institute an action to enjoin any person who holds a valid license issued by any other of the above-named boards without first obtaining the written consent of such other board to file the injunction proceedings.

Oregon

Bill Introduced.—S. 369, proposes to authorize an examination of **hospital records** by any person suffering any injury or his attorney or any party legally liable or against whom a claim shall be asserted for compensation or damages for such injuries.

Bill Enacted.—S. 324 was approved April 10, 1951. It amends the **Medical Practice Act** by, among other things, providing that the one-year internship requirement be eliminated so that if, by reason of the national emergency, any shorter period of internship in a hospital which is approved for internship by the American Medical Association is served and the applicant thereafter completes the one-year period as a resident in such hospital or as a commissioned medical officer of the Armed Forces of the United States, such applicant will be deemed to have fulfilled the internship requirement.

Pennsylvania

Bills Introduced.—H. 989, proposes the creation of a **State Mental Health Authority** and sets forth its powers and duties. S. 486, proposes to authorize the State Board of Medical Education and Licensure to grant licenses, under certain circumstances, to persons desiring to practice **chiropractic** which is defined to mean a system of locating misaligned or displaced vertebrae of the human spine and the adjustment by hand of such misaligned or displaced vertebrae. S. 488, proposes the establishment of a **State Board of Psychological Examiners** to administer and carry out the provisions of the psychology act. S. 489, proposes the creation of a **State Board of Psychological Examiners** and defines a psychologist as a person who renders to individual clients or to the general public, for fees or personal profit, any professional service requiring the application of recognized principles, methods and procedures of the science and profession of psychology, such as counseling, interviewing, administration and interpretation of standardized tests of mental abilities, aptitudes and personality characteristics for the purpose of psychological classification or evaluation; or, for fees or personal profit, applies such psychological techniques for purposes of re-education guidance or readjustment. Licentiates would not be permitted to practice medicine.

South Carolina

Bill Introduced.—H. 1407, proposes the creation of a South Carolina State **Cancer Nursing Home Board** for the purpose of erecting, equipping, furnishing nursing homes for persons suffering from cancer.

Texas

Bills Introduced.—H.J.R. 38, proposes an amendment to the state constitution which would create a **State Medical Education Board** to make grants, loans and scholarships to students desiring to study medicine. H. 151, proposes the creation of a **State Medical Education Board** to receive and pass upon, allow or disallow all applications for grants, loans and scholarships made by students who are bona fide citizens and residents of the State and who desire to become physicians and are acceptable for enrollment in a qualified four-year medical school. The purpose of such grants is to enable applicants to obtain a medical education which will qualify them to become licensed physicians in Texas.

Vermont

Bill Enacted.—S. 38, was approved April 11, 1951. It requires the annual **renewal of licenses** of practitioners of medicine and surgery and provides for the forfeiture of license of persons who fail to renew their license annually.

Washington

Bill Enacted.—S. 189 has become Chapter 117 of the Laws of 1951. It provides regulations for the licensing and regulating of **nursing homes.**

Wisconsin

Bill Introduced.—S. 701, proposes to authorize the board of examiners in chiropractic to make use of the **injunctive process** to restrain violations of the law.

MEDICAL NEWS

ALABAMA

Dr. Durrett Named Dean.—Dr. James J. Durrett, chief of the Federal Trade Commission's Bureau of Medical Opinions, Washington, D. C., will become the second dean at the Medical College of Alabama between May 15-June 15, succeeding the late Dr. Roy Kracke. During World War I Dr. Durrett was an officer of the U. S. Public Health Service. From 1920-1928 he was professor of public health at the University of Tennessee School of Medicine, serving at the same time as health officer for Memphis. He was director of the Food and Drug Administration's work with purity in drug products for three years, later becoming director of professional relations and chairman of the research committee for E. R. Squibb and Sons. He left Squibb and Sons to join the Federal Trade Commission.

CALIFORNIA

Dr. Giauque to Receive Gibbs Medal.—The 1951 Willard Gibbs Medal of the Chicago Section of the American Chemical Society will be presented to Prof. William Francis Giauque, Ph.D., of the University of California Medical School, Berkeley, at a dinner on May 18. The medalist is renowned for his research at low temperatures, for which he won the Nobel Prize in Chemistry for 1949. The Willard Gibbs Medal Award, founded in 1910 by William A. Converse, secretary of the Chicago Section from 1901 to 1909, is made to "anyone who, because of his eminent work in, and original contributions to, pure and applied chemistry, is deemed worthy of special recognition," and has been bestowed annually with the exception of 1922.

Application for Hospital Funds.—Applications for 1951-1952 funds to help construct hospital and local health facilities will be accepted by the State Department of Public Health until May 31. The staff of the department's bureau of hospitals is available to assist local hospitals and health departments in preparing their applications. Forty-six California construction projects have been sanctioned for financial help since the subsidy program began in July 1947. The federal allocation available during the present fiscal year amounted to $2,905,505 in California. Assistance to voluntary hospitals is limited to a maximum of one-third in federal funds, to be matched by two-thirds in locally subscribed money. Public hospitals may draw one-third from federal and one-third from state "matching funds."

COLORADO

Dr. Meiklejohn to Head Department.—Dr. Gordon Meiklejohn, assistant professor of medicine at the University of California School of Medicine, San Francisco, became professor and head of the department of medicine at the University of Colorado School of Medicine, Denver, April 1. He succeeds Dr. Robert S. Liggett, who resigned as department head to enter private practice but who still serves as clinical professor of medicine. Dr. Meikeljohn has also been associated with the California State Department of Public Health as a research associate and consultant.

CONNECTICUT

Public Health Association.—The annual meeting of the Connecticut Public Health Association will be held May 9 at Yale University School of Medicine, department of public health, New Haven. On the program will be two simultaneous morning sessions and a joint afternoon session.

Yale to Increase Enrolment.—Yale University School of Medicine, New Haven, will increase the number of students admitted next fall from 65 to 80, making it the largest first year class in the history of the 138 year old medical school. The decision to increase the enrolment was in support of the policy of the Association of American Medical Colleges to train more students to meet the nation's need for physicians without decreasing the quality of the education. The total enrolment, including special students at the school of medicine, is already at a record high of 453. The Grace-New Haven Community Hospital, which is affiliated with the school of medicine, will soon complete a new unit which has helped make possible the increased enrolment.

ILLINOIS

Examinations for Public Health Physicians.—The Illinois Civil Service Commission has announced competitive examinations for Physician I (public welfare), Tuberculosis Control Physician I and Psychiatrist I for employment by the State of Illinois. The final date to apply is June 1. State residence is not necessary. Information may be obtained from the commission at 501 Armory Building, Springfield, Ill.

Public Relations Conference.—The first Illinois "county medical society level" conference on public relations, sponsored by the public relations committee, Adams County Medical Society, will be held at the Lincoln Douglas Hotel in Quincy the evening of May 14. The conference has been arranged for the Sixth Councilor District of the Illinois State Medical Society, but all physicians are invited to attend. The speakers include: John W. Neal, executive secretary; J. C. Leary, Chicago, public relations councilor; Dr. Percy E. Hopkins, Chicago, chairman, public relations committee; Dr. Harold M. Camp, Monmouth, secretary, Illinois State Medical Society, and Leo Brown, assistant to the general manager in charge of public relations, American Medical Association, Chicago.

Chicago

Awards for Hospital Interns.—The board of directors of Mount Sinai Hospital has established two cash awards that will be presented to the interns who make the best case presentation during the year at the regular Friday morning clinical-pathological conferences. The first prize is $100 and the second $50.

The Hektoen Lecture.—Dr. Sheila Sherlock of the Postgraduate Medical School, University of London, England, will deliver the twenty-seventh Ludvig Hektoen Lecture of the Frank Billings Foundation of the Institute of Medicine of Chicago at the Palmer House May 11 at 8 o'clock. Her subject will be "Hepatic Venous Catheterization in Clinical Research."

Training for Civil Defense.—At the request of the Chicago Civil Defense Corps the Chicago Surgical Society has assumed the responsibility for providing instruction for training dentists of the area in the medical and surgical aspects of the defense plan. It has been determined that emergency service will need the aid of 110,000 people trained to care for medical emergencies in the event of an atomic attack. The dentists have been assigned to assist in surgery, working under the direction of the surgeons in strategic locations. The Chicago Dental Society and the committe of the Chicago Surgical Society has made up the program.

KANSAS

State Approves Fluoridation of Water.—The Kansas State Board of Health now recommends for the partial protection of children's teeth from dental caries the addition of fluoride to the public water supplies for Kansas communities where the supply is deficient in fluoride and where local dental and medical professions approve the program and communities can meet and maintain the standards required by the State Board of Health. After cities have decided for themselves that they want their water treated, the Division of Sanitation of the Kansas State Board of Health will assist in setting up regulations and requirements assuring that waterworks will supply safe water.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

State Medical Society Meeting.—The Kansas Medical Society will hold its annual meeting in Topeka May 14-17 under the presidency of Dr. F. Roy Croson of Clay Center. Guest speakers at the general sessions will be:

John H. Moore, Grand Forks, N. D., Office Gynecology.
William J. Engel, Cleveland, One-Stage Suprapubic Prostatectomy.
Thomas F. Frawley, Boston, ACTH and Cortisone in General Practice.
Ethan A. Brown, Boston, The Field of Allergy.
Stuart C. Cullen, Iowa City, Use of Depressant Drugs in Premedication and in the Postoperative Period.
Robert L. Jackson, Iowa City, Infant Feeding.
N. Frederick Hicken, Salt Lake City, Management of Intestinal Obstructions.
John R. Schenken, Omaha, Essential Thrombocytopenic Purpura.
Clyde L. Randall, Buffalo, Prevention of Abortion.
Charles H. Burnett, Dallas, Texas, Current Concepts of the Mechanisms and Management of Edema.
Robert A. Kehoe, Cincinnati, Industrial Medicine and the General Practitioner.

Drs. Tullos O. Coston, Oklahoma City, and Albert C. Stutsman, St. Louis, will be guest speakers for the eye, ear, nose and throat section. Roundtable luncheons will be held Tuesday and Wednesday with panels of guest speakers at a question and answer period. The annual banquet will take place at 7 p. m. Wednesday. The Woman's Auxiliary will meet in conjunction with the association, as will the Kansas Medical Assistant's Society. The eye, ear, nose and throat section meeting will be held on Tuesday and Wednesday. Technical exhibits will be shown.

MICHIGAN

Foundation Begins Community Studies.—With a grant to Michigan State College at East Lansing, the Health Information Foundation is launching a series of community studies through which a pattern for community self study of health services is to be developed. The study grant of $28,000, made to Michigan state's Social Research Service, will begin with an invitation to a Midwestern community to study its own health situation. The college has contributed $8,350. By December 31 it is expected that the fact finding phase will be completed, and action to improve health deficiencies will be under way. During the succeeding two years the research group will make follow-up visits to check results in health betterment. Questions on which the project is expected to throw light include: What type of community leaders can best initiate a health program? What methods can a community use to secure facts about its health situation? What pitfalls should be avoided? Chairman of the foundation's advisory committee is Dr. John B. Pastore, executive director, Hospital Council of Greater New York.

MISSISSIPPI

Society News.—The semiannual meeting of the Delta Medical Society was held in Greenwood April 11. The guest speaker was Dr. Robert C. Lynch of New Orleans, who spoke on "Abdominal Wounds."

Narcotic Violation.—Dr. Fred Lee Ricks of Drew pleaded no contest in the District Court at Oxford to a criminal information filed charging violation of the federal narcotic law. On February 28 the imposition of sentence was suspended, and he was placed on probation for a period of five years.

Heart Disease Control Program.—The heart committee appointed by Dr. Billy S. Guyton, Oxford, president of the Mississippi Medical Association met in Jackson in November with Dr. Archie L. Gray, Jackson, presiding. A program was outlined, which is being carried out under the auspices of the committee and the State Board of Health. Dr. Thaddeus D. Labecki, Jackson, is medical consultant to the unit. Of the phases suggested by the heart committee of the state medical association the following are now being exercised: (1) cardiovascular consultations are being rendered to the physicians in the rural areas wherever such consultations are not readily available; the request for such service must come either from individual physicians or from local hospital staffs or county medical societies; (2) a lay education program which at present is being limited to high school and junior colleges; (3) postgraduate cardiovascular seminars are being planned for the middle of June in Jackson, Gulfport and one or two other towns; participation of excellent speakers from two medical schools has been assured, and (4), a study of x-ray films taken during the tuberculosis survey is nearing completion, and the results obtained will govern the attitude to this approach as a case finding method.

MONTANA

Personals.—Dr. Gay F. Tidyman of Joliet has been appointed surgeon general of the national department of the U. S. Spanish-American War Veterans. Dr. Tidyman has practiced medicine in Montana for more than 50 years and is a charter member of the state medical association's "50 Year Club." ——Dr. Amos R. Little Jr., Helena, has been named as a delegate of the Northern Rocky Mountain Ski Association to the coming meeting of the National Ski Association.

Spring Clinic at Billings.—The Yellowstone Valley Medical Society will hold its annual Spring Clinic at Billings May 28-29. The speakers on the program are: Drs. Eugene A. Edwards, Chicago; John H. Fitzgibbon, Portland, Ore.; N. Frederick Hicken, Salt Lake City; Mr. Norman J. Holter, Helena; Drs. Manuel E. Lichtenstein, Chicago; Harold D. Palmer, Denver, and Frederick E. Templeton, Seattle. Reservations for lodging should be addressed to Dr. Edward W. Gibbs, Billings Clinic, Billings.

NEBRASKA

A Memorial Instead of a Celebration.—Howells, Neb., was already to turn out April 5 for a big celebration in honor of Dr Henry D. Myers Sr., who for 45 years had practiced in tha community. Speeches were written, programs printed, flower ordered, guests invited, food purchased and place cards prepared. Then, four days before the event Dr. Myers suffere a cerebral hemorrhage, and on the day before the celebratio he passed away. The special anniversary number prepared b the *Howells Journal* became a memorial instead.

NEW YORK

Portrait of Dr. Whipple.—On February 25 at an informal tea in the board room of the Rochester Academy of Medicine a portrait of Dr. George H. Whipple, dean of the University of Rochester School of Medicine and Dentistry, was presented to the academy as a gift of its past presidents.

Dr. Wade Named Esso Medical Director.—Dr. Leo J. Wade has been appointed medical director of Esso Standard Oil Company, succeeding Dr. McIver Woody, who has retired after almost 30 years with the company and affiliates. Dr. Wade formerly held assistant professorships in medicine and preventive medicine and public health at Washington University School of Medicine, St. Louis, and was a lecturer in public health at the George Warren Brown School of Social Work at Washington University. He joined Standard Oil Company (New Jersey) as assistant internist in 1949 and was made assistant medical director of Esso Standard the following year.

Postgraduate Instruction.—The following postgraduate lectures have been arranged by the Medical Society of the State of New York in cooperation with the New York State Department of Health. Dr. Jack Wolf, New York, will address the staff of St. Joseph's Hospital in Yonkers May 9 on "Diagnosis and Treatment of Cutaneous Cancer and Precancerous Lesions" at 9 p. m. at the hospital. On June 13 Dr. Cranston W. Holman, New York, will speak to the staff on "Tumors of the Lung and Mediastinum." On May 15 the Jefferson County medical and dental societies will hear Harold A. Solomon, D.D.S., Buffalo, speak on "Diseases of the Soft Tissues of the Mouth" at a dinner meeting at 6:30 p. m. in the Black River Valley Club in Watertown. The Utica Academy of Medicine will hear a lecture on "The Management of the Surgical Diabetic" at its meeting at 8 p. m. May 17 at the Hotel Utica in Utica. Dr. Frederick W. Williams, New York, will deliver the lecture.

New York City

Ninth Harvey Lecture.—Elvin A. Kabat, Ph.D., associate professor of bacteriology, College of Physicians and Surgeons, Columbia University, will deliver the ninth Harvey Lecture of the current series at the New York Academy of Medicine on May 17 on "Immunochemistry of the Blood Group Substances."

Memorial Journal to Dr. Berg.—The *Journal of the Mount Sinai Hospital* for March-April is dedicated to the memory of Dr. Albert A. Berg, who was a member of the hospital's surgical staff from 1899 until his retirement in 1934, when he became consulting surgeon. He died July 1, 1950. In addition to a memorial to Dr. Berg, the volume contains 87 scientific articles.

Professor of Neurosurgery.—Dr. Isadore M. Tarlov has been appointed professor of neurosurgery and neurology and director of the department of neurology and neurosurgery at New York Medical College, Flower-Fifth Avenue Hospitals. During World War II Dr. Tarlov engaged in research on the development of a method of repairing nerves by using blood plasma clot as an adhesive rather than by the customary method of sewing.

Venereal Disease Clinic Closed.—The Central Social Hygiene Clinic, oldest and largest of the 15 venereal disease clinics operated by the city department of health, was permanently closed March 31 because of a steady decline in the city's venereal disease case load. The clinic at 125 Worth Street, opened in 1917, during the past 34 years has treated more than 250,000 patients. The number of reported cases of venereal diseases in New York City reached a high point in 1946, when 13,401 cases of infectious syphilis and 24,350 cases of gonorrhea were reported to the department. Last year 5,385 cases of infectious syphilis and 16,784 cases of gonorrhea were reported. That is a decline of 59.8 per cent in infectious syphilis and of 31.1 per cent in gonorrhea.

Personals.—Dr. Reginald M. Atwater, executive secretary of the American Public Health Association, was made an honorary fellow of the Society of Medical Officers of Health in Great Britain on March 2 at a luncheon in the Statler Hotel. ——Dr. Carl Muschenheim, attending physician, New York Hospital, and associate professor of clinical medicine, Cornell University Medical College, has accepted the chairmanship of the Tuberculosis Committee of the New York Tuberculosis and Health Association.——Dr. John Jewell has been appointed medical director of Ayerst, McKenna & Harrison Limited, New York. Formerly medical director of the Canadian division of the firm, Dr. Jewell is now in charge of medical services for both United States and Canada.——Dr. Oswald S. Lowsley returned in March from a six weeks' lecture tour of Venezuela, Colombia, Panama and Central American countries.

OHIO

State Radiologists Meeting.—The Ohio State Radiological Society will hold its annual meeting at the Fort Hayes Hotel, Columbus, May 25-27. The scientific program will begin May 26, and on May 27 panels and discussions on therapy will be held.

Akron Doctors' Orchestra.—The Doctors' Orchestra of Akron, under the direction of Dr. Alexander S. McCormick, will present a program at the Congress Lake Club in Hartville May 21 at 3:30 p. m. This is its second spring program, the orchestra having given a benefit concert for the Salvation Army March 8.

Postgraduate Lectures in Toledo.—Dr. William K. Boyd, Toronto, Canada, will conduct a lecture series in Toledo at the Nurses' Home of St. Vincent's Hospital May 10 and 11. Topics which Dr. Boyd will discuss are the collagen diseases, tumors of the neck, bronchogenic carcinoma, nephritis, hepatitis and cirrhosis and renal anoxia. This lecture series is presented by the Medical Advancement Trust of Maumee Valley Hospital in Toledo. All physicians are welcome. There is no fee.

PENNSYLVANIA

Hospital Seminar.—The Association of Residents and Ex-Residents of Allentown Hospital has invited the members of the Northampton County Medical Association to attend its annual seminar May 10 at the hospital. Members of the Irving Wright Clinic of the Cornell Medical Center will present papers on peripheral vascular disease. Speakers will be Drs. Grafton E. Burke, Jere W. Lord Jr. and Donald A. Covalt, all of New York.

Society News.—The Pennsylvania Academy of General Practice will hold its annual convention May 25-27 at the Bedford Springs Hotel in Bedford.——The Pennsylvania Radiological Society will hold its annual meeting in Pittsburgh May 18-20. Much of the program will be devoted to discussion of the clinical use of radioactive isotopes. This thirty-sixth annual session of the state organization will be held at the William Penn Hotel. Dr. Edgar C. Baker, Youngstown, Ohio, is president and Dr. James M. Converse, Williamsport, secretary-treasurer.

Pittsburgh

Mellon Lecture.—The Mellon Lecture will be given by Dr. Robert A. Moore, professor of pathology and dean of the school of medicine of Washington University, St. Louis, on "The Nature of Teratomatous Tumors" at 8:30 p. m. May 9 in the auditorium of Mellon Institute. The Mellon Lectures are sponsored by the Society for Biological Research of the University of Pittsburgh School of Medicine. Members of the medical profession are cordially invited to attend.

TEXAS

Grants for Research.—Recent gifts to the University of Texas Medical Branch, Galveston, for the support of research include $3,000 from the Smith, Kline and French Laboratories, Philadelphia, for research under the direction of Dr. Clarence S. Livingood, professor of dermatology and syphilology; $6,600 from the W. K. Kellogg Foundation for participation in a curriculum planning program for nurses at the University of Chicago; $1,300 from the American Heart Association, New York, for the support of research under the direction of Charles E. Hall, Ph.D., of the department of physiology, and $1,800 from the American Cancer Society for the support of research under the direction of Charles M. Pomerat, Ph.D., director of the Tissue Culture Laboratory.

WEST VIRGINIA

Society News.—At a meeting of the West Virginia Society of Anesthesiologists at the Stonewall Jackson Hotel in Clarksburg May 6 Dr. Donald H. Stubbs of Washington, D. C., will present a paper on "Anesthesia for Part-Time Anesthetists." ——The annual tri-county medical meeting, sponsored by the medical societies in Monongalia, Marion and Taylor counties, will be held at the Fairmont Field Club in Fairmont May 24 beginning at 2 p. m. There will be a symposium on rheumatic fever, the guest speakers being Drs. John W. Martin and A. Carlton Ernstene, both of Cleveland; Dr. Charles P. Bailey, Philadelphia, and Dr. Leo M. Taran, New York. A forum discussion will follow the dinner. Physicians are invited.

Graduate Education Program in Charleston.—The second of a series of three one-day meetings on graduate education will be held at the Daniel Boone Hotel in Charleston May 16, sponsored by the West Virginia University Schol of Medicine and the State Medical Association's committee on medical education. A symposium on diseases of the kidney will be presented. The preclinical part of the program will be given by members of the faculty of West Virginia University School of Medicine, the clinical part by out-of-state speakers. These will be:

J. Murray Kinsman, Louisville, Relation of the Kidney to Hypertension.
Isidore Snapper, New York, Diagnosis of Acute Renal Insufficiency, and Diagnosis and Treatment of Chronic Nephritis.
Thaddeus S. Danowski, Pittsburgh, Newer Concepts of Electrolyte Balance.
George E. Wakerlin, Chicago, Significance of Albuninuria, and Methods of Diagnosis and Treatment of Uremia.

The meeting is scheduled to adjourn not later than 5 p. m.

WYOMING

Cancer Symposium.—A cancer symposium will be held in Rawlins May 20 for physicians and dentists throughout the state under the sponsorship of the Wyoming Division, American Cancer Society, in cooperation with the Wyoming State Medical Society and the State Department of Health. The program is as follows:

Lou P. Matthei, Ogden, Utah, Cancer and Atomic Energy.
William H. Moretz, Salt Lake City, Cancer of the Skin.
N. Frederick Hicken, Salt Lake City, Cancer of the Breast.
Round Table Discussion: Common Errors in Cancer Diagnosis, Lou Matthei, moderator.
Ernest J. Eichwald, Salt Lake City, What's New in Cancer Research?
E. Stewart Taylor, Denver, Cancer of the Uterus.
William H. Moretz, Salt Lake City, Cancer of the Oral Cavity.
Round Table Discussion: Common Errors in Cancer Therapy, Ernest Eichwald, moderator.

HAWAII

Territorial Medical Meeting.—The Hawaii Territorial Medical Association holds its annual meeting at the Mabel Smyth Building in Honolulu May 3-6 under the presidency of Dr. Rogers Lee Hill, Honolulu. Visiting speakers were:

Nicholson J. Eastman, Baltimore, Obstetrical Hemorrhage.
Herbert F. Traut, San Francisco, Cytological Diagnosis in Obstetrics and Gynecology.

A symposium on ACTH and Cortisone was given Friday. The annual cocktail dinner dance will be held Saturday at the Oahu Country Club. The woman's auxiliary to the association met Friday morning.

GENERAL

Special Society Elections.—The American Surgical Association at its recent meeting in Washington elected Dr. Daniel C. Elkin, Atlanta, president; Drs. Owen H. Wangensteen, Minneapolis, and James F. Mitchell, Washington, D. C., first and second vice presidents respectively; Dr. Nathan A. Womack, Iowa City, secretary, and Dr. B. Noland Carter, Cincinnati, treasurer.

American Goiter Association.—This association will hold its annual meeting at the Deshler-Wallick Hotel in Columbus, Ohio, May 24-26 under the presidency of Dr. Thomas C. Davison of Atlanta. The program includes symposiums on iodine metabolism, diagnosis and medical treatment of toxic goiter, thyroiditis, surgical aspects of goiter and thyroid tumors. The annual banquet will be held Friday evening.

Studies in Multiple Sclerosis.—A grant has recently been made by the National Multiple Sclerosis Society to the H. L. Snyder Memorial Research Foundation, Winfield, Kan., for biochemical studies in multiple sclerosis in the amount of $15,507 for one year. Dr. Harold H. Jones, director and vice president of the foundation, will serve as director of research for the project. The biochemical studies to be made are those involving blood and urine.

International Congress of Physical Medicine.—The organization of this international congress, to be held in London April 14-19, 1952, is being undertaken by the British Board of Management of the International Federation of Physical Medicine. Meetings of the congress will be reserved for matters dealing with the clinical, remedial and prophylactic methods employed in physical medicine and rehabilitation. The congress will be under the presidency of Lord Horder; the secretary is Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2.

American Psychiatric Association.—This association will meet in Cincinnati May 7-11 at the Netherland Plaza, Gibson and Sinton hotels under the presidency of Dr. John C. Whitehorn, Baltimore. The program has been arranged by sections before which a total of 118 papers will be read. Papers on psychoanalysis, hospital psychiatry, private practice, teaching concepts, treatments of various mental disorders, legal psychiatry, social work, group psychotherapy and military psychiatry and other subjects will be read. Roundtable meetings will be held on Tuesday and Thursday beginning at 7 p. m. A public meeting on mental health will be held Monday evening in the Tuft Auditorium at 8 p. m. Mr. Oren Root, president of the National Association for Mental Health, will speak on "Mental Health—Layman's View." The annual dinner will be held at the Netherland Plaza Wednesday evening. Scientific and technical exhibits will be on display. A registration fee of $5 will be charged all nonmembers.

Fifth International Orthopaedic Congress.—This congress of the Société Internationale de Chirurgie Orthopédique et de Traumatologie will be held in Stockholm, Sweden, at the Concert Hall May 21-25, under the patronage of the king and queen of Sweden. Sir Henry Platt, Manchester, England, is president. About 90 papers will be read, 10 on avitaminosis and osteopathy, 30 on low back pain and sciatica—results and treatment, about 20 on hip surgery, 10 on traumatology and the rest on general orthopedic subjects. Fees for members is Sw. crs 100.—; for nonmembers Sw. crs 35.—. The American Express Company is the official travel agency for the congress.

Tuberculosis Society.—The National Tuberculosis Association, American Trudeau Society and the National Conference of Tuberculosis Secretaries will hold joint annual meetings with the Ohio Tuberculosis and Health Association, which is celebrating its 50th anniversary at the Netherland Plaza Hotel in Cincinnati May 14-18. The medical section will open with a symposium on Cortisone and ACTH, with Dr. Eugene B. Ferris, Cincinnati, serving as chairman. On Friday afternoon the medical section will hold a panel discussion on Nontuberculous Diseases of the Chest and Related Matters, with Dr. Robert A. Kehoe, Cincinnati, serving as chairman. At the general meeting on Wednesday at 8: 30 p. m. the Trudeau Medal will be presented to Dr. Florence R. Sabin, Denver.

Pan American Congress on Medical Education.—This congress will take place in Lima, Peru, May 14-18 as part of the program commemorating the Fourth Centenary of the University of San Marcos. Delegates appointed by universities, medical schools, faculties or other medical institutions of the Americas and Europe are invited. In the sessions on scientific works papers will be presented on "Medical Education and Its Tendencies at the Present Time," "Necessary Characteristics of Premedical Education," "The Medical Curriculum" and "Educational Exchange Among the Schools of Medicine in America." Papers will be discussed at roundtable sessions. Further information may be obtained from the office of the secretary, First Pan American Congress on Medical Education, Faculty of Medicine, Lima, Peru.

A Diabetes Kit.—A kit of teaching material, including 11 film strips and sound recordings, has been released by the diabetes branch of the U. S. Public Health Service for instruction of diabetic patients and their families. It was prepared in conjunction with the American Diabetes and the American Dietetic associations to develop knowledge, skills and favorable attitudes of the diabetic patients. This kit of audi-visual aids was especially designed for group teaching in the physician's office, the hospital and the community health agency. In addition to the film strip and recordings the kit contains wall charts, an instructor's guide, a diebetes guide book and a booklet outlining diet plans for the patient. A 33 mm. film strip projector and a 33½ r.p.m. record player are required for showing these materials. Physicians may secure the kit for review prior to purchase through arrangements with the American Diabetes Association, 11 West 42nd Street, New York 17; American Dietetic Association, 620 North Michigan Avenue, Chicago 11, and the American Nurses Association, 1790 Broadway, New York 19. One kit has been deposited with the Committee on Medical Motion Pictures, American Medical Association, 535 N. Dearborn, Chicago, and may be borrowed for preview purposes only. Kits may be purchased from Health Publications Institute, Inc., 216 North Dawson street, Raleigh, N. C., licensee of the U. S. Public Health Service, for $49.80. Individual film strips and records may be ordered separately.

CORRECTION

State Medical Meeting at Kansas City.—Dr. William A. Bloom of Fayette, Mo., was president of the Missouri State Medical Association at the time of its annual meeting in Kansas City, April 22-25, not Dr. Billy S. Guyton, Oxford, Miss., who is president of the Mississippi State Medical Association.

MEETINGS

American Medical Association, Atlantic City, June 11 to 15. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Aero Medical Association, Denver, Colo., May 14-16. Dr. Thomas H. Sutherland, 214 S. State St., Marion, Ohio, Secretary.

Alaska Territorial Medical Association, Ketchikan, May 31-June 2. Dr. William P. Blanton, Box 2569, Juneau, Secretary.

American Association of Genito-Urinary Surgeons, Skytop Lodge, Skytop, Pa., May 16-18. Dr. Norris J. Heckel, 122 S. Michigan Ave., Chicago 3, Secretary.

American Association on Mental Deficiency, Hotel New Yorker, New York, May 21-26. Dr. Neil A. Dayton, P. O. Box 96, Willimantic, Conn., Secretary.

American Broncho-Esophagological Association, Hotel Claridge, Atlantic City, May 7-8. Dr. Edwin N. Broyles, 1100 N. Charles St., Baltimore 1, Secretary.

American College of Chest Physicians, Atlantic City, June 7-10. Mr. Murray Kornfeld, 500 N. Dearborn St., Chicago 10, Executive Secretary.

American College of Radiology, Atlantic City, June 10. Mr. W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Dermatological Association, The Homestead, Hot Springs, Va., May 23-26. Dr. Louis A. Brunsting, 102 Second Ave., S. W., Rochester, Minn., Secretary.

American Diabetes Association, Chalfonte-Haddon Hall, Atlantic City, June 9-10. Dr. John A. Reed, 11 W. 42d St., New York 18, Secretary.

American Electroencephalographic Society, Hotel Claridge, Atlantic City, June 16-17. Dr. John A. Abbott, Massachusetts General Hospital, Boston 14, Secretary.

American Gastro-Enterological Association, Atlantic City, June 8-9. Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco 2, Secretary.

American Geriatrics Society, Hotel Brighton, Atlantic City, June 7-9. Dr. Malford W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

American Goiter Association, Deshler-Wallick Hotel, Columbus, Ohio, May 24-26. Dr. George C. Shivers, 100 E. St. Vrain St., Colorado Springs, Colo., Secretary.

American Gynecological Society, Waldorf-Astoria Hotel, New York, May 7-9. Dr. Norman F. Miller, 1313 E. Ann St., Ann Arbor, Mich., Secretary.

American Laryngological Association, Hotel Claridge, Atlantic City, May 9-10. Dr. Louis H. Clerf, 1530 Locust St., Philadelphia 2, Secretary.

American Laryngological, Rhinological and Otological Society, Hotel Claridge, Atlantic City, May 6-8. Dr. C. Stewart Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

American Neurological Association, Atlantic City, June 18-20. Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

American Ophthalmological Society, The Greenbrier, White Sulphur Springs, W. Va., June 7-9. Dr. Maynard C. Wheeler, 30 W. 59th St., New York 19, Secretary.

American Orthopedic Association, The Greenbrier, White Sulphur Springs, W. Va., June 20-23. Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

American Otological Society, Hotel Claridge, Atlantic City, May 11-12. Dr. John Lindsay, 950 E. 59th St., Chicago 37, Secretary.

American Proctologic Society, Atlantic City, June 7-10. Dr. W. Wendell Green, 1838 Parkwood Ave., Toledo 2, Ohio, Secretary.

American Psychiatric Association, Cincinnati, May 7-11. Dr. R. Finley Gayle Jr., 501 E. Franklin St., Richmond 19, Va., Secretary.

American Radium Society, Atlantic City, June 6-9. Dr. John Wirth, U. S. Marine Hospital, Baltimore, Secretary.

American Rheumatism Association, Hotel Dennis, Atlantic City, June 8-9. Dr. Charles Ragan, 620 W. 168th St., New York 32, Secretary.

American Society for the Study of Sterility, Ritz-Carlton Hotel, Atlantic City, June 9-10. Dr. John O. Haman, 490 Post St., San Francisco 2, Secretary.

American Therapeutic Society, Atlantic City, June 8-10. Dr. Oscar B. Hunter, 915 Nineteenth St. N.W., Washington 6, D. C., Secretary.

American Urological Association, Palmer House, Chicago, May 21-24. Dr. Charles H. deT. Shivers, Boardwalk National Arcade Bldg., Atlantic City, N. J., Secretary.

Association for the Study of Internal Secretions, Chalfonte-Haddon Hall, Atlantic City, June 7-9. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City 3, Secretary.

California Medical Association, Hotel Biltmore, Los Angeles, May 13-16. Dr. Albert C. Daniels, 450 Sutter St., San Francisco 8, Secretary.

Catholic Hospital Association of the United States and Canada, Convention Hall, Philadelphia, June 2-5. Mr. M. R. Kneifl, 1402 S. Grand Blvd., St. Louis 4, Executive Secretary.

Conference of Presidents and Other Officers of State Medical Associations, Hotel Traymore, Atlantic City, June 10. Mr. John E. Farrel, 106 Francis St., Providence 3, R. I., Secretary.

Great Falls Medical-Surgical Conference, Great Falls, Montana, June 25-26. Dr. William E. Sullens, Box 1066, Great Falls, Chairman.

Idaho State Medical Association, Sun Valley, June 17-20. Dr. Robert S. McKean, 305 Sun Building, Boise, Secretary.

Illinois State Medical Society, Hotel Sherman, Chicago, May 22-24. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

Kansas Medical Society, Topeka, May 14-17. Dr. D. D. Vermillion, 512 New England Bldg., Topeka, Secretary.

Louisiana State Medical Society, New Orleans, May 7-9. Dr. C. Grenes Cole, 1430 Tulane Ave., New Orleans 12, Secretary.

Maine Medical Association, Poland Spring House, Poland Spring, June 17-19. Dr. Frederick R. Carter, 142 High St., Portland 3, Secretary.

Massachusetts Medical Society, Hotel Statler, Boston, May 22-24. Dr. H. Quimby Gallupe, 8 Fenway, Boston 15, Secretary.

Medical Library Association, Denver, June 28-30. Miss Caroline Riechers, Rush Medical College Library, 1758 W. Harrison St., Chicago 12, Secretary.

Mississippi State Medical Association, Biloxi, May 15-17. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.

National Tuberculosis Association, Cincinnati, Ohio, May 14-18. Dr. James E. Perkins, 1790 Broadway, New York 19, Managing Director.

New Jersey, Medical Society of, Haddon Hall, Atlantic City, May 14-17. Dr. Marcus H. Greifinger, 315 W. State St., Trenton 8, Secretary.

North Carolina, Medical Society of the State of, The Carolina, Pinehurst, May 7-9. Dr. Millard D. Hill, 203 Capitol Club Bldg., Raleigh, Secretary.

North Dakota State Medical Association, Bismarck, May 19-22. Dr. O. A. Sedlak, 702 First Ave. S., Fargo, Secretary.

Oklahoma State Medical Association, Mayo Hotel, Tulsa, May 21-23. Mr. R. H. Graham, 1227 Classen St., Oklahoma City, Executive Secretary.

Rhode Island Medical Society, Providence, May 9-10. Dr. Morgan Cutts, 106 Francis St., Providence 3, Secretary.

Sectional Meeting, American College of Surgeons:

Detroit, Mich., Book-Cadillac Hotel, May 9-11. Dr. Eugene A. Osius. 1553 Woodward Ave., Detroit 26, Chairman.

Society for Investigative Dermatology, Ritz-Carlton Hotel, Atlantic City, June 7-8. Dr. Herman Beerman, 255 S. 17th St., Philadelphia, Secretary

Society of American Bacteriologists, Chicago, May 28-June 1. Dr. John E. Blair, 1919 Madison Ave., New York 35, Secretary.

Society of Biological Psychiatry, Claridge Hotel, Atlantic City, June 17. Dr. George N. Thompson, 1136 W. Sixth St., Los Angeles 17, Secretary.

South Carolina Medical Association, Ocean Forest Hotel, Myrtle Beach, May 15-17. Dr. N. B. Heyward, 105 W. Cheves St., Florence, Secretary.

South Dakota State Medical Association, Aberdeen, June 2-6. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

INTERNATIONAL

European Congress on Rheumatism, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edströn, Lund, Sweden, Secretary.

International Academy of Proctology, Atlantic City, N. J., U. S. A., June 14-15. Dr. Alfred J. Cantor, 43-45 Kissena Blvd., Flushing, New York, Secretary.

International Anesthesia Research Society, London, England, Sept. 3-7. Mr. R. W. Cope, University College Hospital, London W.C.1, England.

International Association of Allergists, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

International Congress of Anesthesiology, Nursing School of the Salpiettre, 47 Boul de l'Hospital, Paris, France, Sept. 20-22. 12 rue de Seine, Paris 6ᵉ, France, Secretariat.

International Congress of Clinical Pathology, London, England, July 16-20. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W.9, England, Secretary.

International Congress of Gynecology, Maison de la Chimie, Centre Marcellin, Paris, France, June 23-29. Dr. Maurice Fabre, 1, rue Jules-Lefebvre, Paris IX, General Secretary.

International Congress on Mental Health, Mexico City, Mexico, Dec. 11-19.

International Congress of Military Medicine and Pharmacy, Paris, France, June 17-23. Physician General Dutrey, 8, bis, rue de Recollets, Paris X, Secretary General.

International Congress of Orthopedic Surgery and Traumatology, Stockholm, Sweden, May 21-25. Dr. Anders Karlen, Karolinska Instituts Ortopediska Klinik, Stockholm, Secretary.

International Exhibition of Medical Arts, Turin, Italy, May 30-June 12. Prof. S. Teneff, Palazzo della Exposizioni al Valentino, Turino, Italy.

International Gerontological Congress, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

International Hospital Congress, Brussels, Belgium, July 15-21. Capt. J. E. Stone, 10 Old Jewry, London E.C., England, Secretary.

International Poliomyelitis Congress, Copenhagen, Denmark, Sept. 3-7. Prof. Dr. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

International Society of Angiology, Claridge Hotel, Atlantic City, N. J., U. S. A., June 9. Dr. Henry Haimovici, 105 E. 90th St., New York 28, Secretary.

International Society of Surgery, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

International Society for the Welfare of Cripples, Fifth World Congress, Stockholm, Sweden, Sept. 9-14. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

Pan American Congress on Medical Education, Lima, Peru, May 14-18. Dr. Carlos F. Krumdieck, Washington 914, Lima, Secretary General.

Pan Pacific Surgical Association Congress, Honolulu, Hawaii, Nov. 10-21. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

World Confederation for Physical Therapy, Copenhagen, Denmark, Sept. 7-8.

World Medical Association, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama: Montgomery, June 26-28. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

Arkansas: * *Regular.* Little Rock, June 14-15. Sec., Dr. Joe Verser, Harrisburg. *Homeopathic.* Fort Smith, June 7-8. Sec., Dr. Carl S. Bungart, 105 N. 14th St., Fort Smith. *Eclectic.* Little Rock, June 7-8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

California: *Written.* San Francisco, June 25-28 and Aug. 20-23. *Oral.* San Francisco, June 23 and Los Angeles, August 18. *Oral and Clinical Examination for Foreign Medical School Graduates.* San Francisco, June 24 and Los Angeles, August 19. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.

Connecticut:* *Regular. Examination.* Hartford, July 10-11. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., Hartford. *Homeopathic.* Derby, July 11-12. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

Delaware: Dover, July 10-12. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

District of Columbia:* *Reciprocity.* Washington, June 11. Sec., Dr. Daniel L. Seckinger, 4130 East Municipal Bldg., Washington.

Florida:* *Examination.* Jacksonville, June 24-26. Sec., Dr. Homer L. Pearson, 701 DuPont Bldg., Miami.

Georgia: Atlanta, June. Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

Guam: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. John Y. Battenfield, Agana.

Hawaii: *Examination.* Honolulu, July 9-12. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

Idaho: Boise, July 9-11. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

Indiana: Indianapolis, June 20-22. Exec. Sec., Miss Ruth V. Kirk, 1138 K. of P. Bldg., Indianapolis 4.

Iowa: * *Written.* Iowa City, June 11-13. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Kansas City, June 6-7. Sec., Dr. O. W. Davidson, 864 New Brotherhood Building, Kansas City.

Kentucky: Louisville, June 6-8. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville.

Louisiana: New Orleans, June. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans 12.

Maine: Augusta, July 10-11. Sec., Dr. Adam P. Leighton, 192 State St. Portland.

Maryland: Baltimore, June 19-22. Sec., Dr. Lewis P. Gundry, 1215 Cathe dral St., Baltimore 1. *Homeopathic.* Baltimore, June 19-20. *Exami nation.* Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

Massachusetts: *Examination.* Boston, July 10-13. Sec., Dr. Robert C Cochrane, Room 37, State House, Boston 33.

Mississippi: Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Jackson 11

Missouri: St. Louis, May 31-June 1, June 7-9. Exec. Sec., Mr. John Hailey, Box 4, State Capitol Bldg., Jefferson City.

Nebraska: * June 1951. Director, Mr. Oscar F. Humble, Room 100 State Capitol Bldg., Lincoln.

New Hampshire: Concord, Sept. 12-13. Sec., Dr. John Samuel Wheele Room 107 State House, Concord.

New Jersey: *Examination.* Trenton, June 19-22. Sec., Dr. E. S. Halli ger, 28 W. State St., Trenton.

New York: Albany, Buffalo, New York and Syracuse, June 26-29. Se Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany 7.

North Carolina: *Endorsement.* Pinehurst, May 7. *Examination,* Raleig June 18-21. Sec., Dr. Joseph J. Combs, 419 Professional Bldg., Raleig

North Dakota: Grand Forks, July 4-7. Sec., Dr. C. J. Glaspel, Grafto

Ohio: *Examination.* Columbus, June 19-21. *Endorsement.* Columbus, Ap 3. Sec., Dr. H. M. Platter, 21 W. Broad Street, Columbus.

Oklahoma: * *Examination.* Oklahoma City, June 6-7. Sec., Dr. Clint Gallaher, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: *Examination.* Philadelphia and Pittsburgh, July. Acti Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

South Carolina: *Examination.* Columbia, June 25-27. *Reciprocity.* Colu bia, April 2 and May 15. Sec., Dr. N. B. Heyward, 1329 Blanding S Columbia.

South Dakota: Rapid City, July 17-18. Sec., Dr. Clarence E. Sherwoo 109 Center St., West, Madison.

Texas:* *Examination.* Austin, June 14-16. Sec., Dr. M. H. Crabb, 17 Medical Arts Bldg., Fort Worth 2.

Utah: Salt Lake City, July 11-13. Asst. Dir., Mr. Frank E. Lees, 324 Sta Capitol Bldg., Salt Lake City 1.

Vermont: *Examination.* Burlington, June. Sec., Dr. F. J. Lawliss, Ri ford.

Virginia: *Examination.* Richmond, June 14-16. Sec., Dr. K. D. Grav 631 First St., S.W., Roanoke.

Virgin Islands: St. Thomas, June 12. Sec., Dr. Earle M. Rice, Thomas.

Washington:* Seattle, July 16-18. Sec., Department of Licenses, M Edward C. Dohm, Olympia.

West Virginia: Charleston, July 9-11. Sec., Dr. N. H. Dyer, Capit Bldg., Charleston 5.

Wisconsin:* Milwaukee, July 10-12. Sec., Dr. C. A. Dawson, River Fall

Wyoming: *Examination.* Cheyenne, June 4. Sec., Dr. Franklin D. Yod Capitol Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: Juneau, August. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Arkansas: *Examination.* Little Rock, May 8-9. Sec., Mr. L. E. Gebau 1002 Donaghey Bldg., Little Rock.

Colorado: *Examination.* Denver, June 6-7. Sec., Dr. Esther B. Starl 1459 Ogden St., Denver. 3.

Connecticut: *Examination.* New Haven, June 9. Exec. Asst., Miss Ma G. Reynolds, State Board of Healing Arts, 110 Whitney Ave., Ne Haven.

Florida: *Examination.* Gainesville, June 2. Sec., Mr. M. W. Emm University of Florida, Gainesville.

Michigan: *Examination.* Ann Arbor and Detroit, May 11-12. Sec., Mi Eloise LeBeau, 101 N. Walnut St., Lansing.

Nebraska: *Examination.* Omaha, May 8-9. Director, Bureau of Examini Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln 9.

New Mexico: *Examination.* Santa Fe, June 17. Sec., Miss Marguerite Ca trell, Box 1522, Santa Fe.

Oregon: *Examination.* Portland, June 2, Sept. 8 and Dec. 1. Sec., D Charles D. Byrne, State Board of Higher Education, University Oregon, Eugene.

Rhode Island: *Examination.* Providence, May 9. Chief, Division of Pr fessional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg Providence.

South Dakota: *Examination.* Vermillion, June 15-16. Sec., Dr. Gregg Evans, 310 E. 15th St., Yankton.

Tennessee: *Examination.* Memphis, July 5-6. Sec., Dr. O. W. Hyma 874 Union Ave., Memphis.

Washington: *Examination.* Seattle, July 11-12. Sec., Department Licenses, Mr. Edward C. Dohm, Olympia.

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* Basic Science Certificate required.

DEATHS

Bishop, Eugene Lindsay ⊕ Chattanooga, Tenn.; born in Nashville April 3, 1886; Vanderbilt University School of Medicine, Nashville, 1914; interned at St. Thomas Hospital; received a certificate in public health from Johns Hopkins University School of Hygiene and Public Health, Baltimore, 1923; field director for the Tennessee State Health Department from 1916 to 1918, director of rural sanitation from 1918 to 1922, assistant commissioner, 1923-1924, and commissioner from 1924 to 1935, when he became health and safety director, Tennessee Valley Authority; formerly chairman of the committee on qualifications, State and Territorial Health Officers, and of the committee on federal relations, State and Provincial Health Officers, of which he had been an honorary life member; at one time a member of the National Advisory Health Council and consultant, Committee for Co-ordination of Health and Welfare Activities of the Federal Government; formerly member of the advisory committee to the Committee on Research in Medical Economics; associated with the International Health Division of the Rockefeller Foundation as a member of the board of scientific directors, 1929-1930 and from 1942 to 1944 and elected for a three year term January 1947; life member, past president of the Southern Branch, formerly member of the executive board and council and past president of the American Public Health Association, which in October 1950 presented him with the Lasker Award "for accomplishments in Public Health Administration"; member of the American Society of Tropical Medicine, National Malaria Society, American Association for the Advancement of Science, Southern Medical Association, Alpha Omega Alpha, Alpha Kappa Kappa and Delta Omega; secretary of the Section on Preventive and Industrial Medicine and Public Health, American Medical Association, 1926 to 1929, and chairman, 1929-1930; assistant professor of preventive medicine and public health at his alma mater; specialist certified by the American Board of Public Health; died in Vanderbilt Hospital, Nashville, February 27, aged 64, of arteriosclerotic heart disease with congestive failure and renal insufficiency.

Hanzlik, Paul John ⊕ San Francisco; born in Shueyville, Iowa, July 24, 1885; Western Reserve University Medical Department, Cleveland, 1912; also a graduate in pharmacy; associated with the Pharmacological Institute and Physico-Chemical-Biological Institute, University of Vienna, 1913-1914; served as captain, medical corps, U. S. Army, attached to Chemical Warfare Service in 1918; after an internship at the Lakeside Hospital, Cleveland, joined the department of pharmacology at his alma mater as a demonstrator, later becoming instructor, associate, assistant and associate professor; emeritus professor of pharmacology at Stanford University School of Medicine, where he had been executive of the department and since 1921 professor; member of the advisory committee to the Scientific Exhibit of the American Medical Association for many years; vice chairman of the council on dental therapeutics of the American Dental Association; member of the American Physiological Society, Society for Pharmacology and Experimental Therapeutics, Society for Experimental Biology and Medicine, American Society for Biological Chemists, California Academy of Medicine, American Association for the Advancement of Science and the International Association of Dental Research; honorary fellow of the American College of Dentists; fellow of the American College of Physicians; consulting pharmacologist, San Francisco Department of Health since 1934 and for the U. S. Department of Agriculture from 1936 to 1944; associate editor of the *Journal of Pharmacology and Experimental Therapeutics* from 1921 to 1934; associate editor of *Archives Internationales de Pharmacodynamie et de Therapie;* author of "Actions and Uses of the Salicylates and Cinchophen in Medicine"; co-author with Dr. Torald Sollmann of "Fundamentals of Experimental Pharmacology," first edition, 1928, and second, 1939; editor of "Handbook of Accepted Remedies, Symptoms and Treatment of Poisoning, Diagnostic Procedures and Miscellaneous Information," third edition published in 1940; died February 1, aged 65, of cerebral thrombosis and arteriosclerosis.

Myers, Burton Dorr ⊕ Bloomington, Ind.; born in Attica, Ohio, March 30, 1870; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1902; dean emeritus at the Indiana University School of Medicine in Bloomington, which he had joined in 1903 as professor of anatomy, serving in this capacity until 1940; became assistant dean in 1920, dean in 1927 and retired in 1940; honored in 1950 when Nu Sigma Nu medical fraternity at the Indianapolis division of the school of medicine established a lectureship in his name; assistant in physiology at Cornell University Medical College in New York from 1898 to 1900 and assistant in anatomy at Johns Hopkins University School of Medicine in Baltimore, 1902-1903; an Associate Fellow of the American Medical Association; member of the American Association of Anatomists, Sigma Xi, Phi Beta Kappa, Alpha Omega Alpha; served as president of the Monroe County Tuberculosis Association; president of the Association of American Medical Colleges, 1928-1929; a charter member and past president of the Bloomington Kiwanis Club and district governor and international trustee of the organization; vice chairman of the Indiana State Planning Board; superintendent of the Greenwich, Ohio, schools in 1893; past president of the Bloomington Chamber of Commerce; since retirement from the deanship had been writing the history of the university from 1902 to 1937, a volume on the history of medical education in Indiana and a biography of the trustees, vice presidents, treasurers, and secretaries of the university from 1820 to 1950; the biography was scheduled to come off the press March 10; died February 28, aged 80, of cardiac failure.

Haines, Thomas Harvey, Montclair, N. J.; born in Moorestown, N. J., Nov. 4, 1871; Starling-Ohio Medical College, Columbus, 1912; later studied in Munich, Zurich and London; formerly assistant porfessor of philosophy and professor of psychology at Ohio State University in Columbus, where he was professor of medicine and nervous and mental diseases; served as part time professor of psychology at Smith College in Northampton, Mass.; life member of the American Psychiatric Association; fellow of the American Association for the Advancement of Science; clinical director of the Ohio Bureau of Juvenile Research in Columbus from 1914 to 1917; at one time field consultant and director of mental health surveys for the National Committee for Mental Hygiene and director of the division on mental deficiency; member of the committee on psychological examination of recruits, National Research Council, in 1917 and psychological examiner for the U. S. Army from 1917 to 1927; served in the Office of the Surgeon General; civilian with Atomic Energy Commission and member of the Office of Scientific Research and Development; for many years affiliated with the outpatient department of the New York Hospital; author of "Mental Measurement of the Blind" and reports of mental hygiene studies in many states and bills offered in legislatures to improve administration in mental health fields; died March 2, aged 79, of coronary occlusion.

Weeter, Harry Montgomery ⊕ Louisville, Ky.; born in Sligo, Pa., Dec. 7, 1887; University of Louisville Medical Department, 1927; specialist certified by the American Board of Pathology; member of the College of American Pathologists and the American Society of Clinical Pathologists; past president of the Jefferson County Medical Society and the Kentucky Society of Pathologists; formerly professor of bacteriology at his alma mater; in 1922 won the Howard Ricketts Prize as a student in pathology at the University of Chicago, where he had been an instructor in bacteriology in 1920; served on the staffs of St. Edward Hospital in New Albany, Ind., Clark County Memorial Hospital in Jeffersonville, Ind., St. Joseph Infirmary, Jewish Hospital and SS Mary and Elizabeth Hospital in Louisville; died February 25, aged 63, of coronary infarction.

⊕ Indicates Fellow of the American Medical Association.

Abramovitz, Morris ⊕ Baltimore, Maryland Medical College, Baltimore, 1906; died February 7, aged 71, of cerebral hemorrhage.

Alter, Retla H. ⊕ Jackson, Mich.; University of Michigan Medical School, Ann Arbor, 1925; member of the American College of Allergists; past president and secretary of the Jackson County Medical Society; for many years secretary-treasurer of the Jackson Academy of Medicine and Dentistry; member of the staff of Foote Memorial Hospital, where he had been chief of the hospital staff and for many years a member of the hospital board; affiliated with Mercy Hospital; died February 14, aged 54, of heart disease.

Amick, Albert Lester, Charleston, W. Va.; College of Physicians and Surgeons, 1907; member of the American Medical Association; honorary life member of the West Virginia State Medical Association; served during World War I; formerly affiliated with Kanawha Valley, St. Francis, McMillan and Salvation Army hospitals; for many years county physician; died March 8, aged 71, of chronic heart disease.

Anderson, James LeRoy, San Antonio, Texas; Western University Faculty of Medicine, London, Ont., Canada, 1909; member of the American Medical Association and the American College of Chest Physicians; affiliated with Robert B. Green Memorial Hospital and Grace Lutheran Sanatorium; died February 3, aged 64, of coronary thrombosis.

Appleman, James Henderson ⊕ Chicago; the Hahnemann Medical College and Hospital, Chicago, 1911; served during World War I; died March 9, aged 64, of pancreatitis.

Auten, Will James, Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1888; member of the American Medical Association; in 1949 at the annual session of the Medical Association of Georgia in Savannah was presented a certificate of merit and a gold button in recognition of more than 50 years as a practicing physician; died recently aged 85.

Bailey, Frank James ⊕ San Francisco; Cooper Medical College, San Francisco, 1899; an Associate Fellow of the American Medical Association; formerly practiced in Red Bluff, Calif., where he was city health officer and county coroner; died February 20, aged 75.

Banks, Claude M., Springfield, Tenn.; University of Tennessee Medical Department, Nashville, 1894; served during World War I; died in the Robertson County Hospital, February 6, aged 83, of myocarditis.

Barker, Merritt Corey, Cortland, N. Y.; Cleveland Homeopathic Medical College, 1901; died in VerNooy Sanitarium January 18, aged 71.

Bauer, Samuel Louis, Cincinnati; University of Cincinnati College of Medicine, 1930; member of the American Medical Association; affiliated with Children's, Bethesda and General hospitals; died February 18, aged 47, of coronary sclerosis.

Bigger, David Andrew ⊕ Rock Hill, S. C.; Jefferson Medical College of Philadelphia, 1917; served during World War I; past president of the York County Medical Society and the Historical Society of York County; past chief of staff of York County Hospital; died February 20, aged 59.

Bigler, Sherman Edwin ⊕ Neoga, Ill.; Northwestern University Medical School, Chicago, 1907; for many years served on the high school board of education and as physician for the Illinois Central Railroad; died February 18, aged 67, of cancer.

Blair, James Luther ⊕ Gastonia, N. C.; Atlanta Medical College, 1915; affiliated with Garrison General Hospital, where he was chief of staff; served as vice president of Gaston Sanatorium; died suddenly February 27, aged 62, of heart disease.

Blank, Frederick ⊕ New York; Christian-Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, Germany, 1920; died in Park East Hospital February 14, aged 57, of coronary thrombosis.

Bleick, Theodore Edward, Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1899; member of the American Medical Association; died February 20, aged 82, of chronic endocarditis and posterior spinal sclerosis.

Bolles, Julius Ralph, Napoleon, Ohio; Toledo Medical College, 1904; member of the American Medical Association; formerly health commissioner of Henry County; affiliated with Toledo (Ohio) Hospital; died February 5, aged 72, of cerebral hemorrhage.

Bracy, Rolla, Wellston, Mo.; Barnes Medical College, St. Louis, 1894; formerly county coroner; died in St. Louis County Hospital, Clayton, February 27, aged 86.

Brelsford, Harley H., Cleveland Heights, Ohio; Ohio Medical University, Columbus, 1901; member of the American Medical Association; died February 28, aged 78, of carcinoma of the lung.

Brown, George Niswander, Hebron, Ohio; Starling Medical College, Columbus, 1898; member of the American Medical Association; affiliated with Newark (Ohio) Hospital; died March 22, aged 75, of cerebral hemorrhage.

Brugh, Benjamin Franklin ⊕ Clearwater, Fla.; Medical College of Virginia, Richmond, 1915; member of the West Virginia State Medical Association; an Associate Fellow of the American Medical Association; fellow of the American College of Surgeons; served on the staff of the Laird Memorial Hospital in Montgomery, W. Va.; died March 1, aged 61, of coronary occlusion.

Brungard, Otis Daniel ⊕ Kenton, Ohio; Western Pennsylvania Medical College, Pittsburgh, 1897; died February 4, aged 80, of carcinoma of the stomach.

Buckmaster, Frank ⊕ Effingham, Ill.; Barnes Medical College, St. Louis, 1899; served as chief surgeon for St. Anthony's Hospital until it was destroyed by fire in April 1949; at one time on the faculty of his alma mater; died February 28, aged 74, of valvular heart disease.

Burns, George Samuel ⊕ Rochester, N. Y.; Albany (N. Y.) Medical College, 1901; veteran of the Spanish-American War; physician on the draft board during World War I; member of the Rochester Academy of Medicine and the Rochester Pathological Society; on the staffs of the St. Mary's Hospital and Highland Hospital, where he died February 23, aged 76, of ruptured aneurysm of the abdominal aorta.

Campbell, John Stewart, Cadiz, Ohio; University of Michigan Homeopathic Medical School, Ann Arbor, 1887; president of the Third Equitable Building & Loan Company, of which he had been a director for many years; died February 9, aged 88, of lobar pneumonia and arteriosclerosis.

Chadwick, Isaac A., Carthage, Miss. (licensed in Mississippi in 1902); member of the American Medical Association; died March 14, aged 76, of heart disease.

Clarke, Raymond Willis, Ellsworth, Maine; Medical School of Maine, Portland, 1916; member of the American Medical Association; served during World War I; affiliated with Eastern Memorial Hospital; died February 11, aged 62, of embolism.

Clobridge, Charles E., Allen, Mich.; Cleveland University of Medicine and Surgery, 1897; affiliated with Hillsdale (Mich.) Community Health Center, where he died February 3, aged 81, of cerebrovascular accident.

Conaway, Aaron Clyde ⊕ Marshalltown, Iowa; Rush Medical College, Chicago, 1900; twice president of the Marshall County Medical Society; formerly mayor of Marshalltown; served during World War I; later a colonel in the medical reserve corps; affiliated with Evangelical Deaconess Hospital and St. Thomas Mercy Hospital, where he died February 2, aged 74, of heart block.

Crawford, Charles Brown ⊕ Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1910; died March 17, aged 66, of pulmonary tuberculosis.

Davis, Winnifred Puffer, Cambridge, Mass.; Tufts College Medical School, Boston, 1898; member of the American Medical Association; served on the staff of the Boston Floating Hospital and the Boston Dispensary; died February 18, aged 85.

Dick, Walter ⊕ Brookville, Pa.; Medico-Chirurgical College of Philadelphia, 1913; served during World War I; chief of staff, Brookville Hospital; died February 4, aged 62, of heart disease.

Donnelly, Francis Edward, Lee Park, Pa.; Jefferson Medical College of Philadelphia, 1915; member of the American Medical Association; affiliated with Mercy Hospital, Wilkes-Barre, where he died February 6, aged 62.

Dunn, Frank C., Lansing, Mich.; Michigan College of Medicine and Surgery, Detroit, 1892; member of the American Medical Association; formerly county physician; died March 1, aged 79, of chronic suppurative cholecystitis with subphrenic abscess.

Edwards, Henry Arthur, Latta, S. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; member of the American Medical Association; died in Mullins (S. C.) Hospital February 8, aged 76, of myocarditis.

Emerick, Edson James, Columbus, Ohio; Long Island College Hospital, Brooklyn, 1887; member of the American Medical Association; past president of the Columbus Academy of Medicine and the American Association for the Study of the Feeble-Minded, now the American Association on Mental Deficiency; one of the founders, and from 1924 to 1930 director, of the Bureau of Juvenile Research; formerly superintendent of the Institution for Feeble-Minded; died in Winter Park, Fla., February 25, aged 87, of bronchopneumonia and arteriosclerosis.

English, Carroll Chapman ⊕ Louisville, Ky.; University of Louisville Medical Department, 1904; served during World War I; served on the staffs of Jewish Hospital and Kentucky Baptist Hospital, where he died February 18, aged 71, of coronary occlusion.

Enos, Manuel Manly ⊕ Oakland, Calif.; California Medical College, San Francisco, 1896; National Medical College, Chicago, 1901; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; died February 14, aged 75.

Estes, James Leonidas, Tampa, Fla.; Emory University (Ga.) School of Medicine, 1921; member of the American Medical Association and the American Urological Association; affiliated with Tampa Municipal and St. Joseph's hospitals; died February 10, aged 55, of carcinoma of the kidney.

Etheridge, William Maxey, Atlanta, Ga.; Atlanta School of Medicine, 1908; died February 4, aged 77, of uremia and arteriosclerosis.

Flocken, Charles Frederick, Pasadena, Calif.; University of Minnesota Medical School, Minneapolis, 1921; formerly practiced in Minneapolis; died February 4, aged 74, or coronary thrombosis.

Forman, Horace Judson Jr. ⊕ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1904; specialist certified by the American Board of Psychiatry and Neurology; retired in 1943 as consultant in neuropsychiatry, Board of Veterans Appeals, U. S. Veterans Administration, Washington, D. C.; died January 20, aged 66, of arteriosclerotic heart disease.

Fraim, Irving William ⊕ Waltham, Mass.; Tufts College Medical School, Boston, 1913; for many years affiliated with Waltham Hospital; since 1932 director of the health staff of the public schools; died in City Hospital, Brunswick, Ga., January 16, aged 61, of cerebral hemorrhage, hypertension and arteriosclerosis.

Francis, Adaline Moxley, Dalton, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1913; died January 30, aged 64, of cerebral thrombosis.

Friedenwald, Gilbert A., New York; Jefferson Medical College of Philadelphia, 1914; died in Phoenix, Ariz., January 14, aged 71, of carcinoma of the lung.

Gardiner, William Robert ⊕ Herrin, Ill.; University of Maryland School of Medicine, Baltimore, 1910; member of the American Association of Industrial Physicians and Surgeons; for many years physician for the Illinois Central Railroad; affiliated with Herrin Hospital, where he died February 13, aged 65, of cerebral hemorrhage.

Garvey, Robert Robey ⊕ Blowing Rock, N. C.; North Carolina Medical College, Charlotte, 1915; member of the American Urological Association; past president of the Fayette County Medical Society; served on the faculty of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem; died in the North Carolina Baptist Hospital, Winston-Salem, February 22, aged 61.

Gauch, Frederick ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1911; served during World War I; a founder of the Midwood Hospital, where he died February 5, aged 65.

Gay, James Gaston, Atlanta, Ga.; Johns Hopkins University School of Medicine, Baltimore, 1923; specialist certified by the American Board of Surgery; member of the Southeastern Surgical Congress; associate in surgery at Emory University School of Medicine; affiliated with Crawford W. Long Memorial Hospital, Emory University Hospital, St. Joseph Infirmary and Grady Hospital; died January 22, aged 53, of coronary occlusion.

Gay, Ray Jackson ⊕ Kansas City, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1914; died in the Research Hospital January 7, aged 59, of coronary thrombosis.

Gay, Robert James, Chicago; Rush Medical College, Chicago, 1902; died in Evanston, Ill., February 25, aged 74.

Gibson, Arias Palmer, Huntington, W. Va.; Kentucky University Medical Department, Louisville, 1905; member of the American Medical Association; affiliated with St. Mary's Hospital and Memorial Hospital, where he died February 13, aged 69.

Glasgow, Marvin Claude ⊕ Cardwell, Mo.; University of Arkansas School of Medicine, Little Rock, 1939; affiliated with Community Methodist Hospital in Paragould, Ark.; accidentally drowned in the St. Francis River January 28, aged 41.

Good, Mark Duty, Charleston, W. Va.; University of Louisville (Ky.) Medical Department, 1913; died February 11, aged 66, of arthritis.

Gorfinkell, Julius ⊕ Pittsburgh; University of Pittsburgh School of Medicine, 1914; specialist certified by the American Board of Radiology; member of the Radiological Society of North America, Pennsylvania Radiological Society and the American College of Radiology; served during World War I; affiliated with the Braddock (Pa.) General Hospital; died February 25, aged 59, of carcinomatosis.

Gradman, Leo I. ⊕ Chicago; Chicago Medical School, 1918; on the staff of the South Chicago Community Hospital; died in Wesley Memorial Hospital February 9, aged 63.

Graham, Robert Hugh ⊕ Aurora, Ill.; Rush Medical College, Chicago, 1920; member of the American Academy of Pediatrics; served during World War I; affiliated with St. Charles Hospital, St. Joseph Mercy Hospital and Copley Memorial Hospital, where he died March 20, aged 58, of coronary occlusion.

Green, Herbert Augustus, Portsmouth, Ohio; Starling Medical College, Columbus, 1904; member of the American Medical Association; veteran of the Spanish-American War; affiliated with Portsmouth General Hospital and Mercy Hospital; died in Pensacola, Fla., February 14, aged 72, of heart disease.

Hail, Richard Allen, Robertsdale, Ala.; University of Tennessee Medical Department, Nashville, 1894; member of the American Medical Association; died February 25, aged 84, of pneumonia, coronary heart disease and arteriosclerosis.

Haile, Leon Campbell ⊕ St. Louis; St. Louis University School of Medicine, 1920; on the staff of Missouri Pacific Hospital; died February 25, aged 56, of injuries suffered when he fell from a window.

Halsey, John Taylor, New Orleans; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; since 1937 professor of pharmacology emeritus at Tulane University of Louisiana School of Medicine; served in France during World War I; died February 12, aged 80, of arteriosclerotic heart disease.

Harless, Leonidas R. ⊕ Gauley Bridge, W. Va.; Kentucky University Medical Department, Louisville, 1905; died February 27, aged 73, of heart failure.

Hassenplug, Frank Atwood, Denver; Jefferson Medical College of Philadelphia, 1890; died in Denver General Hospital February 14, aged 84, of bronchopneumonia.

Henry, Ralph Howard ⊕ Allentown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1924; certified by the National Board of Medical Examiners; founder and first president of the Lehigh County Crippled Children's Society; served as president of the Pennsylvania Physical Therapy Association; affiliated with Allentown General Hospital; died February 15, aged 51.

Ivey, Henry B. ⊕ Goldsboro, N. C.; University College of Medicine, Richmond, 1911; specialist certified by the American Board of Radiology; member of the American Roentgen Ray Society, Radiological Society of North America and the American College of Radiology; past president of the Wayne County Medical Society and the North Carolina Radiological Society; affiliated with State Hospital; died February 3, aged 62, of cerebral hemorrhage.

Jackman, Luther Taylor, Huntington, N. Y.; North Carolina Medical College, Davidson, 1900; affiliated with North Country Community Hospital in Glen Cove, N. Y.; died in Huntington Hospital February 24, aged 85, of bronchopneumonia, arteriosclerotic heart disease and fracture of the right femur.

King, Allen Thurman, Wyoming, Ohio; University of Cincinnati College of Medicine, 1911; died in Bethesda Hospital, Cincinnati, February 23, aged 61, of heart disease.

Kissinger, Chester A., Milwaukee; Milwaukee Medical College, 1907; for many years on the faculty of Marquette University School of Medicine; on the staff of St. Joseph's Hospital; died in the Mayo Clinic, Rochester, Minn., February 2, aged 69, of pemphigus.

Klostermann, Louis Julious, Hoyleton, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1898; member of the American Medical Association; died in St. Mary's Hospital, Centralia, February 18, aged 73, of hemorrhage and duodenal ulcer.

Knowlton, Louis Gordon ⊕ Berea, Ohio; Western Reserve University Medical Department, Cleveland, 1900; one of the founders of Community Hospital, where he was the first chief of staff from 1924 to 1947; died in Franklin, La., February 4, aged 75, of coronary disease.

Krahn, George Washington, Oconto Falls, Wis.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; served as councilor of the Eighth District of the State Medical Society of Wisconsin; died in Tampa, Fla., February 16, aged 62, of pulmonary tuberculosis and Raynaud's disease.

Krause, Charles Shurz ⊕ Cedar Rapids, Iowa; State University of Iowa College of Medicine, Iowa City, 1904; fellow of the American College of Surgeons; past president of the Linn County Medical Society; affiliated with St. Luke's and Mercy hospitals; died February 2, aged 75, of coronary disease.

Latham, Logan Lancaster ⊕ California, Mo.; Barnes Medical College, St. Louis, 1905; president of the Moniteau County Medical Society; served during World War I; owner and medical superintendent of the Latham Sanitarium; died in Jefferson City, Mo., February 11, aged 68, of coronary thrombosis.

LeFevre, Caroline Hurd, Shoreham, N. Y.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1897; formerly practiced in Brooklyn, where she was affiliated with New York Infirmary and Prospect Heights Hospital; died February 15, aged 82, of arteriosclerotic heart disease.

Lieberman, B. Albert ⊕ Kansas City, Mo.; University Medical College of Kansas City, 1895; Bellevue Hospital Medical College, New York, 1896; on the staff of Menorah Hospital, where he died February 19, aged 76, of cerebral hemorrhage.

Livingston, William Harold, New York; Long Island College Hospital, Brooklyn, 1916; served during World War I; formerly medical director of Montefiore Hospital in Bedford Hills, N. Y.; died February 5, aged 55.

Loudon, John Parker, Yakima, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1908; member of the American Medical Association; fellow of the American College of Surgeons; on the staff of St. Elizabeth Hospital, where he died February 18, aged 67, of cerebral hemorrhage.

Lowther, Ray Roberts ⊕ Denver; University of Colorado School of Medicine, Denver, 1913; for many years on the staff of Denver General Hospital; died in St. Joseph's Hospital February 1, aged 60, of carcinoma of the pancreas and liver.

Lundoff, John Fritiof, Brooklyn; Long Island College Hospital, Brooklyn, 1912; on the courtesy staff, Swedish Hospital, where he died February 22, aged 73, of carcinoma of the intestine.

McCabe, Walter Wallace, Chicago; Northwestern University Medical School, Chicago, 1909; member of the staff of St. Mary of Nazareth Hospital, where he died February 5, aged 66, of coronary thrombosis and myocardial infarction.

McCarty, Virgil Warren ⊕ Kansas City, Mo.; University of Kansas School of Medicine, Kansas City, 1912; specialist certified by the American Board of Otolaryngology; served during World War I; affiliated with Children's Mercy and St. Luke's hospitals; died February 25, aged 65, of hypertensive cardiovascular disease.

McClure, Charles Oscar ⊕ Trinidad, Colo.; Gross Medical College, Denver, 1893; city and county health officer; formerly practiced in Starkville, where he was a member of the district school board; served on the city council; affiliated with Mount San Rafael Hospital; died in Presbyterian Hospital, Denver, February 4, aged 83.

McDavid, Jesse Taylor, Decatur, Ill.; Barnes Medical College, St. Louis, 1904; member of the American Medical Association; served in France during World War I; on the staffs of the Decatur and Macon County Hospital and St. Mary's Hospital, where he died March 20, aged 73, of cerebrovascular hemorrhage.

MacKedon, William Leo ⊕ Milwaukee; Harvard Medical School, Boston, 1919; served on the staffs of Johnston Emergency, St. Michael and Evangelical Deaconess hospitals; died March 2, aged 61, of cardiovascular disease.

Maley, William Henry, Galesburg, Ill.; Rush Medical College, Chicago, 1897; member of the American Medical Association; past president of the Knox County Medical Society; served overseas during World War I; for many years alderman; on the staffs of St. Mary's and Galesburg Cottage hospitals; died February 28, aged 83, of cardiac infarct and cholangitis.

Mardis, Chauncey J., Dayton, Ohio; Cornell University Medical College, New York, 1927; member of the American Medical Association; affiliated with Good Samaritan Hospital and the Miami Valley Hospital, where he died February 27, aged 52, of carcinoma of the lung.

Matthews, Jasper Thomas, Heber Springs, Ark.; University of Arkansas School of Medicine, Little Rock, 1912; member of the American Medical Association; founder and owner of Estelle Hospital; county and city health officer; died February 4, aged 65, of coronary occlusion.

Noonan, James Joseph, Cohoes, N. Y.; Albany (N. Y.) Medical College, 1897; on the staff of Cohoes Hospital, where he died February 20, aged 76, of arteriosclerotic heart disease.

O'Brien, Joseph Vincent, Boston; Harvard Medical School, Boston, 1935; member of the American Medical Association; served during World War II; on the staffs of the Boston City Hospital, St. Margaret's Hospital and Carney Hospital, where he died February 16, aged 43, of melanosarcoma.

Pollard, Willis John, Wichita Falls, Texas; medical department of Tulane University of Louisiana, New Orleans, 1880; member of the American Medical Association; at one time secretary of the Kaufman County Medical Society and in 1920-1921 vice president of the State Medical Association of Texas; in 1923 joined the staff of the Wichita Falls State Hospital and retired from the position of assistant superintendent in 1945; died recently, aged 91, of cardiac failure.

GOVERNMENT SERVICES

NAVY

Surgical Teams at the Front in Korea.—The Korean war has seen the development by the Navy of a new medical technique which reduces the former death-toll among troops badly wounded in the first waves of an amphibious attack on enemy beaches. Teams of Navy surgeons and enlisted assistants are now placed aboard landing ships with fully equipped operating rooms and go in to the assault beaches at H-hour with the attacking troops. Thus they are on hand to operate immediately on wounded men who might not survive a long boat ride to a hospital ship off shore.

Formerly, doctors and hospital corpsmen going ashore with first waves of amphibious landing forces could only administer temporary treatment to the wounded. Definitive surgery had to wait until the patient could be taken to a hospital ship or a a large transport, which, depending on enemy resistance to the landing, might be two to eight miles from the beach. Proving ground for the surgical teams was the amphibious invasion at Inchon, Korea, last September, where six original teams carried out the new plan with success. Almost 100 per cent of the troops critically wounded in the early hours of the Inchon assault were treated by the four surgical teams who went in to the beaches in Navy LST's. The two remaining teams waited offshore aboard larger ships to receive casualties for further treatment and hospitalization aboard the ships or evacuation to hospitals in Japan.

Somewhat similar surgical teams were used in the South Pacific operations and the Normandy invasion of World War II, but Inchon was the first landing where a carefully plotted technique was used to coordinate the work of the teams with the intricate military tactics of an amphibious assault. Credit for developing the idea of the surgical team and for working out a detailed scheme for its use in amphibious landings belongs to Capt. Albert T. Walker (MC, USN), Pacific Fleet Surgeon. The organization and direction of the surgical teams' activities in the Korean war has been accomplished by Comm. Charles H. Eaton (MC, USN), who started executing Captain Walker's plan promptly following the war's outbreak.

Each surgical team consists of three physicians and 10 enlisted hospital corpsmen. No team ever drilled more seriously or regularly than did the surgical teams preparing for Inchon. One corpsman had the task of giving plasma or whole blood to the patient, while another cleaned the wounded area for surgery. Still another took care of fractured limbs. Sterilizing equipment and keeping it ready for use was the job of another. One surgical team went to the Inchon beach in an LST laden with amtracks and amunition. While the explosive cargo was unloaded from one side of the bow, the physicians operated on the wounded brought aboard on the opposite side. Although enemy resistance in Inchon was only moderate, this team received 95 wounded, many requiring extensive chest or abdominal surgery. Not one was lost after reaching the operating table.

The second phase of the surgical team's work comes when the beachhead is secured and the fighting lines move inland. At this time the teams become available for work on the hospital ship, aboard large transport ships where extra hospitals have been set up, or they pack up their equipment and follow the troops ashore. The idea is still to reach the wounded within the "Golden Period." Three days after the initial Inchon landing Team Two moved inland and set up an operating room in a battered building on Kimpo airfield, wrested from the Communists only a few hours before. The team was ready to start operating within 65 minutes after their trucks rolled onto the airstrip.

At Kimpo the team worked in cooperation with a Marine medical company, and in one week of continuous operating over 1,900 persons were given aid. These included Marines, Army, South Korean, North Korean, military and civilian alike. Only one life was lost on the operating table at Kimpo during the entire period. Ultimately, all the teams were returned to the U. S. Naval Hospital at Yokosuka, Japan, to give the benefit of their experience to other surgical teams being organized there. Frequently the teams have been reformed for mission back to Korea. At the present there are many surgical teams on standby duty in the Far East. Until needed for a possible new amphibious attack they are integrated into the staffs of hospitals, hospital ships or other vessels where they constantly train for their team jobs by working with wounded men evacuated from the battle front.

Research on Burns.—Ten universities and medical schools have received funds from the Navy Department to carry out a new program of research on "flash" burns—injuries which might result from exposure to an atom blast. The new program will encompass the chemical, physiological and biophysical aspects of burns. All distortions of natural processes of the body, such as might occur in the wake of blasts, will come under investigation. From the research, it is hoped, will emerge new means of protecting military and civilian personnel from burn injuries and new methods of treating flash burn casualties.

Institutions receiving Navy funds are: University of Rochester, Rochester, N. Y.; Medical College of Virginia, Richmond, Va.; Harvard University, Cambridge, Mass.; University of Minnesota, Minneapolis; University of Colorado, Boulder, Colo.; Medical College of South Carolina, Charleston, S. C.; Columbia University, New York; Hahnemann Medical College, Philadelphia; Boston University, Boston, and the University of California, Berkeley, Calif.

Dr. J. L. Lilienthal Jr., professor of environmental medicine at Johns Hopkins University, will administer the program in cooperation with the physiology branch of the Office of Naval Research.

The project steering committee is headed by Dr. Isaac Starr, professor of therapeutic research, University of Pennsylvania. Other members are Dr. Herman E. Pearse, professor of surgery, University of Rochester; Dr. Kenneth C. Blanchard, associate professor of pharmacology, Johns Hopkins University; Dr. Alan R. Moritz, professor of pathology, Western Reserve University, and Dr. E. I. Evans, professor of surgery, Medical College of Virginia.

The Harold W. Smith Lecture.—The Naval Medical School, Bethesda, Md., has created an annual lectureship to be called the Harold Wellington Smith Lecture in honor of Rear Admiral Harold W. Smith, U.S.N., retired, former commanding officer of the Naval Medical School and the Naval Medical Center. Admiral Smith entered the Navy in 1904 after three years of residency in Massachusetts General Hospital. He served with distinction in many important positions until his retirement from active duty in 1946. He received the Legion of Merit for his achievements in medical research. Admiral Smith is now living at the Westchester Apartments in Washington.

The physician selected to give the first lecture in this annual series, on April 27, was Dr. Hans Selye, director of the Institute of Experimental Medicine and Surgery, University of Montreal, Montreal, Canada. The surgeon general of the Navy, Rear Admiral Lamont Pugh, spoke on Admiral Smith's contributions to medicine.

Clinical Psychologists Needed.—The Navy's Bureau of Medicine and Surgery announces there will be 18 Civil Service positions for clinical psychologists available at its continental hospitals and recruit training facilities in early May. The positions pay from $5,400 (for the GS-11) to $8,800 (*for the GS-14*) per annum. Clinical psychologists may apply for these positions by addressing a request to the Bureau of Medicine and Surgery, Attn.: Professional Division, Navy Department, Washington 25, D. C.

PUBLIC HEALTH SERVICE

The Annual Report.—Important advances along the health front in the United States during the last year are recounted in the 1950 annual report of the Public Health Service recently made public. Specific observations in medical and related research are listed, together with reports on progress made toward meeting the nation's needs for hospitals and health centers, toward increasing trained health personnel and strengthening state and local health services.

The report shows that the 1949 death rate followed the same declining trend that has been shown during the past 10 to 20 years. In 1949 the death rate declined from 9.9 per 1,000 population in 1948 to 9.7 per 1,000. Although 3,700,000 babies were born in the United States in 1949, fewer infants died in the first year of life. Maternal deaths also declined. In 1949 the infant mortality rate was 31 for every 1,000 live births, and the maternal mortality rate was 9 per 10,000 live births. The birth rate was 24.1 per 1,000 population, as compared with 24.2 in 1948.

Deaths from chronic diseases showed little change from the 1948 figure, although mortality from these diseases has been mounting with the growing and aging population. Heart disease and cancer continued to hold the first and second places in the list of the most frequent killers. These two causes together accounted for half the 1,446,000 deaths from all causes in 1949. The death rate from heart diseases was 20 per cent higher than in 1940; the cancer death rate was 15 per cent higher. Fewer cases of diphtheria, influenza, malaria, scarlet fever, whooping cough and smallpox were reported in 1949 than in any other year. In contrast, new highs were reported for chickenpox, amebic dysentery and poliomyelitis. National marriage and divorce rates also declined in 1949. The marriage rate was 10.7 per 1,000, the lowest since 1939. The divorce rate declined for the third consecutive year. The rate in 1949 was 2.6 per 1,000 population, as compared with 2.8 per 1,000 in 1948.

Doctor Warner Assigned to Near East.—Dr. Estella Ford Warner has been assigned to a foreign mission in public health under the Point 4 program. Dr. Warner has been chief of the Division of State Grants of the Public Health Service, which administers the multimillion dollar program of federal grants to states for development of state and local health services. She will now participate in a new project that will help establish a school of public health at the American University in Beirut, Lebanon. This will be the first public health training facility in the area and will train students and subprofessional personnel from all the Arab countries.

Many of Dr. Warner's 30 years in medicine have been in administering public health programs in underprivileged areas. After graduating she joined the YWCA staff and was assigned to work among refugees in Archangel, Russia. For years she worked among Indians in New Mexico, Colorado, Arizona and California. She first practiced medicine as a pediatrician in Portland, Ore., and later was director of the child hygiene program in that state. She was the first woman to be commissioned in any of the unifiormed services when she received a Public Health Service commission in 1932.

Diseases Traceable to Water and Milk.—A 1949 report on outbreaks of disease traceable to water, milk and milk products and other foods shows that since 1938 there have been 274,557 cases of disease that have occurred during 4,189 outbreaks of this kind in the United States. There were 693 deaths from these causes during this period. During 1949 there was an increase of 951 reported cases of waterborne infections over the previous year and a decrease of 367 cases of diseases caused by milk and milk products. The 1949 figures are: water—25 outbreaks, 1,570 cases, three deaths (one less than in 1948); milk and milk products—15 outbreaks, 246 cases, no deaths (compared with two deaths in 1948); other foods—367 outbreaks, 9,043 cases, 11 deaths. The totals for the period 1938-1949 inclusive are: water—130,524 cases, 94 deaths; milk and milk products—16,170 cases, 103 deaths; other foods—113,205 cases, 430 deaths; undetermined—14,558 cases, 66 deaths.

Dr. Leonard A. Scheele, the Surgeon General, commente "the summary of disease outbreaks unfortunately reflects only fraction of the true picture because literally thousands of cas occurring every year are never reported to health departments He stated that reported figures for outbreaks and cases resulti from foods other than milk and milk products are believed represent no more than 10 to 15 per cent of the true number occurrences. Outbreaks attributed to water and milk, accordi to the report, have declined by more than 50 per cent in the pa 10 years, but outbreaks traced to other foods have shown a stea increase. One outbreak of 107 cases of infectious hepatitis Glide, Ore., was traced to water from a well drilled at the loc school. An outbreak of 132 cases of food poisoning among scho children in Middlesex County, Mass., was traced to imprope pasteurized milk. Copies of the report are available from t Public Health Service, Federal Security Agency, Washingt 25, D. C.

MISCELLANEOUS

Science Advisor to the State Department.—Joseph B. Koepf Ph.D., formerly instructor in pharmacology at Johns Hopki University School of Medicine and now research associate chemistry at the California Institute of Technology, has be named science adviser in the Department of State. Creation the office of the science adviser was proposed by Dr. Lloyd Berkner, special consultant to the secretary, in his rep "Science and Foreign Relations," made public last June.

A major responsibility of the science adviser and his st will consist of helping shape U. S. foreign policies and of a vising on the administration of programs in their science aspec In assuming this responsibility, Dr. Koepfli's office will dr on the competence of other scientists and will seek to bri about the closest teamwork between American scientists a government officials in policy formulation and administratic His office will serve as the central point in the department liaison with the National Science Foundation, the Nation Academy of Sciences, the National Research Council and oth public and private science organizations. The office of scien adviser will be bolstered by the placement in important forei service posts of American scientists. These science staffs will kee Dr. Koepfli abreast of developments of science abroad and wi facilitate the flow of scientific information between this count and friendly nations.

Appoint Acting Director of Health Resources Office.—D Will H. Aufranc has been appointed acting director, Heal Resources Office, National Security Resources Board, succee ing Dr. Norvin C. Kiefer, who has been named director the Division of Health Services and Special Weapons Defens National Civil Defense Administration. The Health Resourc Office is charged with planning for use of the nation's heal resources in wartime. It works closely with the Health R sources Advisory Committee, National Security Resourc Board, of which Dr. Howard A. Rusk is chairman. Dr. A franc is on loan from the United States Public Health Servic A native of Missouri, prior to coming to the Board last Se tember as a consultant on manpower, he had had 15 yea of administrative work in the public health field.

Major General Grant to Direct Red Cross Blood Program.- Maj. Gen. David Grant, USAF retired, surgeon-general of th Air Force during World War II, has been appointed direct of the National Blood Program of the American Red Cro effective May 1, succeeding Dr. G. Foard McGinnes, resigne Dr. Ross T. McIntire will continue to serve as chairman of th blood program Medical Policies and Procedures Committe Dr. Russell L. Haden, who has been serving as medical directo will become associate director and will be responsible for med cal phases of the program. Dr. Grant will direct all phases the Red Cross Blood Program and be responsible for the furthe extension of the program to meet increased military and civ defense needs.

FOREIGN LETTERS

LONDON

Paying for the National Health Service.—Under this heading, a review of the National Health Service costs appeared in an editorial in the *British Medical Journal* of March 3, 1951. For many years before 1948, the British Medical Association had been working out its own ideas for a comprehensive medical service. It was more concerned with the organization of such a service than with the economics of it. In general however, on a basis of experience gained by the National Health Insurance the Association was in favor of an insurance scheme.

As the Minister of Health, Mr. Hilary Marquand, usefully reminded the country a few days ago, insurance contributions accounted for only $112,000,000 of the $1,120,000,000 that is now the annual bill for the National Health Service. Ninety per cent of this cost is paid for by the public out of taxation; that is, by the bulk of the wage earners of the country, who have progressively less choice in the spending of their money.

The illusion of getting something for nothing undoubtedly lessens the sense of responsibility of those who apparently think they can get for nothing things that they formerly were prepared to buy for themselves, for example, household remedies, such as aspirin, purgatives and laxatives, first aid dressings, cotton wool and bandages.

The medical association's approval of the Beveridge Report of 1942 was an endorsement of a view the profession had always held, namely, that there should be no financial obstacle between the patient and the treatment he needs, and, as stated in the *British Medical Journal* article mentioned above, one could argue with even greater force that there should be no financial obstacle between the people of this country and the food they need, if body and soul are to be kept together. To carry the argument to its absurd conclusion and to state that the man and the woman in the home should not pay for their bread and butter would soon land us in a state peopled by men and women without initiative or sense of responsibility.

Now that the country is entering a phase in which each item of state expenditure is carefully scrutinized, the medical profession will be just as much concerned as the Ministry of Health to see that the essentials of the service have not in part to be sacrificed because of the waste of money on nonessentials.

The above-mentioned article cites as an example that there are large numbers of persons who are now going about with two pairs of spectacles at the cost of the state, although one pair would have sufficed. Thousands of persons are visiting their physicians to get apparently free of charge those domestic remedies that they formerly were content to buy for themselves.

It has been suggested that there might have to be charges throughout the service for such items. This in no way offends against the idea of a comprehensive medical service, or against the idea that there should be no financial obstacle between the patient and the treatment he needs. There is now in Australia an arrangement whereby the essential and expensive drugs, such as the antibiotics, should be completely free of charge, while the rest should be paid for. The *British Medical Journal* says that it should not pass the wit of the administrators to make provision for such special categories as old age pensioners.

In evidence before the Select Committee on Estimates, the British Medical Association suggested that there was a case for an inquiry into the possible levying of a "hotel charge" for board on patients admitted to hospitals and that a contribution toward the cost of appliances should be made. If some economic reform on these lines could be worked out, then the state would in effect be doing for the medical services what it is doing for the food services; that is, it would be subsidizing the service to such an extent as to relieve the economic strain on the consumer, while at the same time leaving the consumer with the free choice of the commodity and a sense of individual responsibility for paying his own way without hardship.

If any government wishes to impose certain charges in the National Health Service, it will have to take its courage in both hands and before doing so will have to take great care to see that the public fully understands all the aspects of the case. It could be argued that, with the introduction of token charges in relation to different items of medical care, the country would have both a more efficient and a less costly comprehensive medical service. The article in the *British Medical Journal* concludes by saying that this subject might well be the basis of a joint inquiry on the part of both the medical profession and the economists.

The Meat Shortage.—In an editorial, the *British Medical Journal* of Feb. 17, 1951, reviews the present meat shortage in Britain. It is fortunate that the Nutrition Society should have chosen the comparative merits of animal and vegetable foods in nutrition as the subject of its most recent discussion. At least the people of Britain have the benefit of expert advice on the nutritional risks they incur and how best to avoid them, even if many go hungry or more probably lose their appetites from dull and unattractive meals.

The proteins of meat are of high nutritional value. Little is lost in their conversion into proteins needed for human body growth or repair. The value of fish, poultry, eggs, milk and cheese proteins is equal to that of meat proteins. Many cannot obtain poultry or fish because of their scarcity and high cost. Milk and cheese, although rather cheap, are on the whole a poor basis for appetizing dishes.

Butcher's meat is missed not only as a source of protein but for its reasonably priced and highly flavored extracts. A slice of meat or a spoonful of stew greatly encourage the consumption of substantial amounts of green vegetables, potatoes, or other starches. On the other hand, there is ample proof that robust health may be easily maintained by vegetarian diets that include milk and possibly eggs.

Dr. S. G. Willimott has shown that 36 to 44 Gm. of animal protein per person were consumed daily in Britain during the period 1939-1949 and that this amount seems luxurious when compared with the 5 Gm. that during the war had to satisfy Japanese civilians and European prisoners of war in internment camps.

It has been shown by Dr. R. F. A. Dean, working in Germany with Professor McCance and Miss Widdowson, that orphan children grew remarkably well when given most of their protein in the form of bread and vegetables. Also Dr. S. K. Kon experienced no ill effects from a diet of potatoes and butter lasting several months.

In spite of the above mitigating factors, there is a darker side to the general picture of the meat shortage. Not all members of internment camps survived to tell of their privations. Africans who rely too much on vegetable proteins may develop kwashiorkor, a disease closely studied by Drs. Cecily Williams, H. C. Trowell, Lucy Wills and others. The most prominent features of this disease are an enlarged liver and anemia, with a characteristic fading of the skin and hair as an external sign. The malady affects both children and adults and is often fatal. A similar condition has been observed in the West Indies by Waterlow and in the Balkans by Czerny. When there is such plain evidence of injuries caused by extreme deficiency of animal protein, suspicion must be raised that less spectacular ill effects might well occur in a partial deficiency.

It may be useful to remember that when two proteins defective in one or more amino acids are consumed one often compensates for the deficiencies of the other; thus a mixed vegetable diet is less objectionable than a diet in which one particular vegetable greatly predominates. A few vegetable proteins, however, have nutritional values approaching those of animal proteins.

Protein of the soya bean deserves special mention in this connection, and potato protein is also valuable. In food flavoring, one might pay more attention to the intricacies of Chinese cookery, which appears to conjure savory flavors from the soya bean and to produce something like chicken soup with a basis of wheat gluten.

Since the nutritive value of animal protein is in part due to the associated vitamin B_{12} content, alternative sources of this factor, such as by products of the antibiotics industry, are possibly worth further development.

As pointed out by Dr. D. A. Boyd, the prices paid abroad for mutton and beef are only half those we paid to our home farmers. At present, therefore, we seem to be paying an insurance premium to maintain a prosperous agricultural community at home by greatly limiting supplies from abroad.

TURKEY

Tuberculosis in Turkey.—At the eleventh National Medical Congress, held at Ankara, Oct. 16-19, 1950, Ord. Prof. Tevfik Saglam of Istanbul University presented a report on tuberculosis in Turkey. Professor Saglam, the foremost authority on tuberculosis in Turkey, who for almost 20 years has been active in tuberculosis control work in Istanbul, gave a short history of societies for the prevention of tuberculosis, the first of which was founded in 1916 in Istanbul but was short-lived because of conditions arising in the wake of World War I. In 1923 a society was established in Izmir (Smyrna), but it was not very active. In 1926 the Istanbul society was reestablished; it became very active, especially after 1940, when the effect of war conditions was reflected in a rising incidence in tuberculosis.

According to prewar statistics, the tuberculosis death rate in Turkey's three largest cities, Istanbul, Ankara and Izmir, was 150 to 200 per hundred thousand and in rural communities 80 to 100. Considering that 18,000,000 persons are living today in 40,000 villages, tuberculosis takes on an important aspect. In January 1949 the Ministry of Health and Social Assistance called in an advisory council; as a result the bill introduced by the ministry became law in April and accordingly £30,000,000 (£3,000,000 for 10 years) was allocated for tuberculosis prevention and control.

Tuberculosis is second in importance among public health problems in Turkey, malaria having almost come under control. Long years of malaria control work, the application of DDT and administration of quinacrine plus health propaganda have considerably lessened the incidence of malaria, and deaths from malaria are now few.

The tuberculosis death rate is 150 to 200 per hundred thousand. The rise in the cost of living, high prices for food and rent and an insufficient number of hospital beds for the tuberculous, resulting in long waiting lists, have greatly increased the spread of the disease among the lower income groups during the war years.

In 1950 the Ministry of Health and Social Assistance had 1,476 beds for tuberculosis patients in tuberculosis hospitals and sanatoriums, of which 90 per cent are free beds, and 1,891 beds at the annexes of general hospitals. However, the waiting lists are still long. There are 635 beds for tuberculous patients under the administration of other ministries; municipalities have 233 beds, provincial hospitals have 82 beds, and minority hospitals (all in Istanbul) have 80 beds. Societies for the prevention of tuberculosis provide 635 beds. Collectively there are 4,397 beds provided by the government, bringing the total of beds for tuberculous patients in Turkey to 5,092, of which 2,528 are in Istanbul. Eight localities, Istanbul, Ankara, Izmir, Bursa, Adana, Adapazar, Eskişehir, Trabezond and Rize, have government dispensaries where free examination and treatment are provided. Of the societies for the prevention of tuberculosis, the Istanbul society is the most active. There are 14 tuberculosis clinics in the poorest and most populated districts. Medicaments and treatment are free, and the very poor patients are given food supplements in addition. All the clinics have x-ray apparatus. There is one mobile unit. Examinations are made in schools and workrooms. The society has a 232 bed sanatorium in Istanbul-Erenköy, established in 1932, which also receives paying patients. In 1943 a school for the training of tuberculosis visiting nurses was established. There are 30 students, but a new building accommodating 50 students is to be opened soon.

With part of the endowment the late Mrs. Naile Saglam bequeathed to the Istanbul Society for the prevention of tuberculosis, a tuberculosis research institute was established in Istanbul and linked to the third medical department of Istanbul University, where Ord. Prof. Tevfik Saglam trains specialists and medical students get experience in tuberculosis detection. The Istanbul society has an income of £3,740,000, of which £1,359,000 derive from the sale of stamps and £740,000 from a 10 per cent tax on places of amusement. Since 1929 the society has published and distributed a health magazine.

Fifty-nine of the 63 provinces have a society for the prevention of tuberculosis; the Ankara, Izmir and Bursa societies are the most active. Many of the provincial societies have their own x-ray apparatus, and treatment and BCG vaccination are free.

Among the recommendations made at the tuberculosis advisory council meeting were the establishment of a separate tuberculosis department at the ministry of health under a director general and the establishment of a campaign council headed by the minister of health and comprised of one ordinarius professor each from Istanbul and Ankara, one member each from the ministries of education, labor, transportation and national defense and three members from tuberculosis prevention societies. Intensification of campaigns in schools, in industry, in the army and in urban and rural communities and the establishment of 85 clinics (one in communities of 10,000 to 15,000 population, two for a population of 50 to 100,000) have also been recommended. Rural communities will need a special program, which can be achieved only under Point 4 or the Marshall Plan. The program provides for the speedy increase of sanatoriums and hospitals. On the average, every year 40,000 persons die of tuberculosis, but to make available so many beds from government funds is impossible. Health, sickness and hospital insurance has not yet been established, and endowments or donations from private individuals are rare.

Bejel or Desert Child Syphilis.—In 1949, when the Ministry of Health and Social Assistance cooperated with the Syrian Health Department, microbiologist Prof. Zühdü Berke of the Ankara Refik Saydam Institute of Hygiene and Dr. Tahsin Berkin, assistant director of the institute, were appointed to make a survey of bilharzia in Syria. They also inquired into bejel, a nonvenereal disease similar to syphilis, yaws and pinta. It is acquired by direct contact, lesions forming in the mouth, nose and throat, and it is endemic among the nomads of the middle Euphrates Valley. Bejel was described in medical literature in 1938. Dr. E. Herndon Hudson, a medical missionary, who since 1936 has lived in close contact with the Arab nomads, reported in the *American Journal of Tropical Medicine* (1946) that bejel is a communicable disease similar to syphilis, yaws and frambesia, differing in several respects and observed mostly in children. Dr. Hanelmann, who lived for several weeks among the desert Arabs, was of the opinion that the disease is syphilis. In 1941, Hoff and Shaby wrote that cardiovascular and central nervous system complications have not been observed and that the disease is not hereditary. In bejel lesions, a great many spirochetes are found, corresponding morphologically to Treponema pallidum. Serologic changes are also similar. Propagation of bejel spirochetes in animals has not yet been successful.

Dr. Reyyad El Safedi, director of health for the Syrian province Eldjezire, Dr. Munir Antiba and Dr. Mehmed Nafiz reported (1) that bejel is common among the Shammar and Sebii nomads, who live in the wide desert area extending from Eldjezire to Mossul and into the lower Euphrates Valley, (2) that bejel has decreased in the Syrian desert and (3) that the real focus is in the Iraquian desert land. The Sebii bedouins believe that nobody can escape the disease and that it is best to have an attack of it during childhood, so they scarify the finger tips and bring the abrasion into contact with an infected area.

According to an old Arabic encyclopedia, the word bejel connotes a disgusting spot or wound. The first signs of the disease are petechial spots and lesions in the mucous membrane of the nose, mouth and throat. The Arabs thought bejel, or child syphilis, a fitting name for the disease. This was confirmed by Dr. Rushdi Sabri Tarzi, inspector general of the Syrian Ministry of Health; Dr. Sabri Izzeddin, director of quarantine and infectious diseases: Dr. Reyyad El Safedi, director of health of the Eldjezire provinces, and Dr. Nafiz.

According to the report of Prof. Zühdü Berke and Dr. Tahsin Berkin submitted to the Ministry of Health and Social Assistance, bejel does not exist in Southern Turkey's border provinces of Hatay, Urfa and Mardin. As the physical features and the climate are entirely different, nomadic desert tribes are not encountered there.

SWEDEN

Pituitary Gland Implantation for Chronic Arthritis.—Some 100 patients with chronic arthritis have recently been treated at the Rheumatic Hospital in Lund by implantation of the anterior lobe of the pituitary gland. At a recent meeting of the Swedish Society of Internal Medicine, Drs. Gunnar Edström and Stig Thune gave an account of their technique and results. The heads of recently slaughtered calves and pigs were rushed to the hospital, where they were dissected out with aseptic precautions. The anterior lobes were ready for implantation about a half hour after the animals' death. Two or three of the lobes were introduced into the gluteal muscles or muscles of the patient's thigh through a 1.5 to 2 cm. long incision made in the skin under local anesthesia, the opening being closed by suture of the skin. Clinical response, when there was one, was prompt, the patient's range of movements being improved and pain and tenderness relieved in a few hours. The reaction was remarkably like that which follows injections of pituitary adrenocorticotropic hormone (ACTH), but while it was less marked it was also more prolonged than the reaction to ACTH.

Analysis of 51 cases in which implantation was done between September 1949 and March 1950 shows that in November 1950 there were 22 patients who were rendered symptom free and nine who achieved improvement. The disease relapsed in seven cases and was uninfluenced by this treatment in 13 cases. In as many as 27 cases the clinical effects of this treatment were still demonstrable nine months later, and during these months 20 of these patients were completely symptom free. The older the patient, the less satisfactory the results. Results seem to depend on hormone action, to judge by the biochemical reactions observed, for these did not last more than 24 hours or, at most, two days. It is most unlikely that the prolonged effects are due to any successful transplantation of the pituitary gland, for, as Jacobsohn has shown, the implanted anterior lobe quickly undergoes necrosis and is reabsorbed. Drs. Edström and Thune have met the objection that their results might depend on simple operation trauma by control tests with particles of calf brain implanted with the same technique. This control test failed to evoke any of the biochemical or clinical reactions observed when the anterior lobe of the pituitary gland was implanted. The response to implantation being slighter, slower and of longer duration than the response to ACTH, it would seem that the actions of the two are not strictly parallel. Experiments on animals indicate that about half the quantity of injected ACTH is excreted within five minutes, whereas the implanted pituitary gland is disposed of less quickly. It is therefore probably more effective and more biologically desirable. The investigations now proceeding at Lund have also been conducted on parallel lines at Vienna, where Fellinger has introduced the system of deep freezing of the pituitary gland between the slaughter of its owner and its implantation into man. This device is now being given a trial at Lund with a view to preserving the biologic activities of the gland as effectively as possible.

Slow Promotion of Hospital Surgeons.—In the organ of the Swedish Medical Association, *Svenska Läkartidningen*, Dr. Gustaf Petrén of Lund has conducted some interesting inquiries into the average age of hospital surgeons on their appointment to a permanent post. During the decade 1900-1909, the average age was 37.4 years. In the next decade it was 38.2 years, and in the next after that it was 39.5 years. In the decade 1930-1939 it was 41.1 years, and in the decade 1940-1949 it had jumped to 45 years. If the five year period 1946-1950 be taken by itself, the average age was 46.4 years.

Rheumatoid Arthritis of Traumatic Origin.—In a discussion of the existence of traumatic rheumatoid arthritis, Dr. Eric Jonsson of Stockholm quotes Kauffmann's five criteria for acceptance of this diagnosis: 1. The joint must have been normal before the trauma in question. 2. The patient must not have suffered from polyarthritis earlier. 3. The injury to the joint must be considerable. 4. The signs of polyarthritis must have begun in the injured joint. 5. The interval between the trauma and the onset of polyarthritis must not be longer than one to 10 days. While the Anglo-Saxon literature on the subject is scant, much attention has been paid it in Sweden, and it received considerable attention at an inter-Scandinavian conference in Stockholm in 1948. It was pointed out by Berglund and Jonsson that they had succeeded in finding only one such case among 2,236 cases of polyarthritis carefully scrutinized with this possibility in mind. The attitude of insurance authorities and institutions is evidently not the same in Sweden as it is in Norway, for 24 cases of traumatic rheumatoid arthritis have been accepted as such by the Swedish national insurance office while in Norway no patient has been awarded any compensation for traumatic rheumatoid arthritis by its national insurance office. Yet it may be assumed that both trauma and polyarthritis occur with approximately equal frequency in the two countries.

Dr. Jonsson quotes Ponteva as saying that though trauma is common under military conditions in Finland, its responsibility for subsequent rheumatoid arthritis is questioned in this country. Dr. Jonsson also refers to a case in which an injury to a joint was quickly followed by signs of polyarthritis, but in which it transpired that the erythrocyte sedimentation rate had been considerably raised before the injury. So it may well happen that rheumatoid arthritis has been unnoticed before a joint is injured, having given rise to no symptoms or, having done so, without the patient recollecting them later on when a joint came to be injured. It is considerations such as these which have led the critics of the theory of traumatic articular rheumatism to be skeptical and to suggest that its patrons have waded out of their depth.

Detention of the Sane in Asylums.—The public and the medical profession lately have been distressed by the fate of a man who was duly certified as insane and admitted to an asylum in 1925. It was a comparatively large institution, but it was not till some 26 years later that he was found to be sane and presumably to have been so all this time. There may be several such cases awaiting the critical attention of alienists mastering the most recent tests and standards by which the line between sanity and insanity can be drawn, and there is a natural desire for a wholesale combing of all the Swedish asylums to rescue similar patients if such are to be found. In defense of the country's asylums, it should be pointed out that of late they have been much understaffed, largely because of the poor quarters and remuneration offered junior members of the medical profession.

Death of Dr. Anders Lambert Wassén.—The death of Dr. Wassén, on January 16 in Gothenburg, ends an exceptionally distinguished career. Born in 1890 in Sweden, he graduated in medicine in 1914 at Uppsala. Many years later he was created Doctor honoris causa at the University of Lund. Two years earlier, in 1934, he was awarded the jubilee prize of the Swedish Medical Society. He was in charge of the Bacteriological Laboratory of Gothenburg from 1924 onward, and it was here that he made his many valuable contributions to bacteriology.

ITALY

Essential Hypertension.—At the National Congress of the Italian Society of Internal Medicine, Professors Melli and Bartorelli reported on essential hypertension, which was defined as a disease characterized by a rise of systolic and diastolic blood pressure, not connected with renal diseases, arteriosclerosis or any other known cause and related to an arteriolar spasm. Essential hypertension is considerably more frequent than all the other forms of hypertension combined; it has a higher mortality rate than cancer, tuberculosis and infectious diseases in general.

Experimental pathology has demonstrated several ways of inducing constant increases of pressure, including production of renal ischemia, various surgical procedures on the nervous system, modifications of humoral endocrine factors and psychic factors. It is likely that the regulation of pressure and its alterations are the result of a combined action of mechanisms in direct reciprocal relation.

There may be asymptomatic forms, in which no sensation may be perceived and no anomaly observed other than manometric readings. In such forms, despite a high blood pressure, an entirely normal life is possible. At the other extreme is so-called malignant hypertension, with a rapidly progressive and irreversible course, leading soon to death.

Between these extremes, there are forms of hypertension that are related to the patient's habits and that are fairly amenable to treatment by adequate rest and dietetic measures. Hypertension in slender patients is certainly not unusual and in these cases further loss of weight entails an unfavorable prognosis. In some cases, there is rapid renal impairment, while in others there is an early tendency toward arteriosclerosis. Therefore, instead of a disease, one should talk about a disease group.

All the forms must be considered with respect to treatment, which, above all, must follow the fundamental concept *primum non nocere* and should never disregard the fundamental notion that hypertension is not a disease in itself, but represents an attempt of the organism to adapt itself to an abnormal situation, represented by the increase in the peripheral resistance. The most recent forms of therapy aim primarily at arresting the spastic arteriolar condition by interrupting the sympathetic nervous influence.

Surgical Treatment of Cancer of the Rectum.—At the fifty-second National Congress of the Italian Society of Surgery, Professor Bastianelli, of the University of Rome, presented a report on the surgical treatment of cancer of the rectum.

He discussed the surgical procedures now considered to be the most adequate for the treatment of cancer of the rectum. Professor Bastianelli concluded that cancer of the rectum is surgically curable in a large proportion of cases (70 to 90 per cent or more) when there is no lymphatic invasion, whatever operative method may be chosen. However, if metastasis occurs in the lymph nodes, the incidence of favorable results is reduced to approximately 20 per cent and may be reduced to zero. In such cases, total excision does not give greater chances of success than conservative methods.

Among the conservative procedures, the intra-abdominal operation may be performed only for rectosigmoid tumors, and tumors in the upper part of the ampulla. Resection by the abdominosacral, abdominoperineal and abdominoanal routes is reserved for tumors located in the middle part of the ampulla, with a lower limit of 4 cm. above the anal sphincter. Under that limit, Professor Bastianelli advises total excision, since statistics demonstrate that tumors in the lower ampulla show the greatest incidence of recurrence.

General Bucciante.—General Alfredo Bucciante recently died in Rome.

An associate professor of ophthalmology, decorated with the Italian Distinguished Service medal, he took part in all the campaigns of the war, establishing himself as a distinguished physician and an excellent organizer. An outstanding example in the military health service, General Bucciante, after having served as president of the medicolegal college, which is the supreme medicolegal council of the Armed Forces, later became counselor of the supreme court and president of one of its sections. A specialist in the study on war pensions, he left valuable works on that subject.

COLOMBIA

Human Placenta in Treatment of Ulcers and of Fistulas.—Dr. A. Luque Forero recently published an article reporting the use of human placenta in the treatment of fistulas, wounds and varicose ulcers (*Medicina y Ciencias Afines*, vol. 2, nos. 6 to 9, Bogotá, 1950). The work was based on previous studies by Dr. V. V. Tretyakow and by Drs. R. Darmillac and J. Poinot of Bordeaux, who reported good results from the use of human placenta in the treatment of postoperative gastroduodenal ulcer. Dr. Luque Forero used human placenta in 12 cases of gastrointestinal fistula, eight cases of urogenital fistula, five cases of wounds and seven cases of varicose ulcer. Fresh placental tissue was applied in cases of fistula, and an oily extract of placenta or placental ointment was applied on ulcers and wounds. The results were excellent in most of the cases. There was complete healing in 83 per cent of the cases of gastrointestinal fistula, in 37 per cent of the cases of urogenital fistula, in 85 per cent of the cases of varicose ulcer and in 100 per cent of the wound cases. The treatment of fecal fistula is longer than that of the other fistulas, but once the closure of the communication with the intestine occurs, the final stage of healing of the fistula is rapid.

First Colombian Congress of Pediatrics.—The First Colombian Congress of Pediatrics, organized by the Society of Pediatrics, met in Bogotá Dec. 3-9, 1950. A group of pediatricians from Venezuela, Argentina, Ecuador and Panama and more than 100 delegates from the different departments of the country attended. Prof. Calixto Torres Umaña was president of the congress and Dr. Jorge Camacho Gamba was secretary. The physicians who attended the congress were received as new members of the Colombian Society of Pediatrics. A portrait of Prof. Jorge Bejarano, the former Minister of Hygiene in the Secretary of Social Welfare of Cundinamarca, was unveiled during the session of the congress. Some of the approved proposals which the faculties of medicine urged were increased study of eugenics, establishment of nonobligatory prenuptial medical certificates and adoption of effective measures to decrease infant mortality in the country. The second congress will meet in Medellín in December 1951.

Social Medical Insurance.—The center of Social Medical Insurance of the Instituto Colombiano de Seguros Sociales in the Department of Caldas was opened Feb. 1, 1951. The center includes 62 physicians, 50 nurses, 20 dentists, clinics in the cities of Pereira and Armenia, with 70 and 65 beds respectively, six ambulances and one complete x-ray unit. The administrative personnel includes more than 100 employees. This is the first center of social urban and rural medical insurance. It covers 13 municipalities, which have an average total population of 500,000 persons, 56 per cent in urban districts and 44 per cent in rural districts. It will give medical care to 30,000 affiliated persons, the majority of whom are peasants.

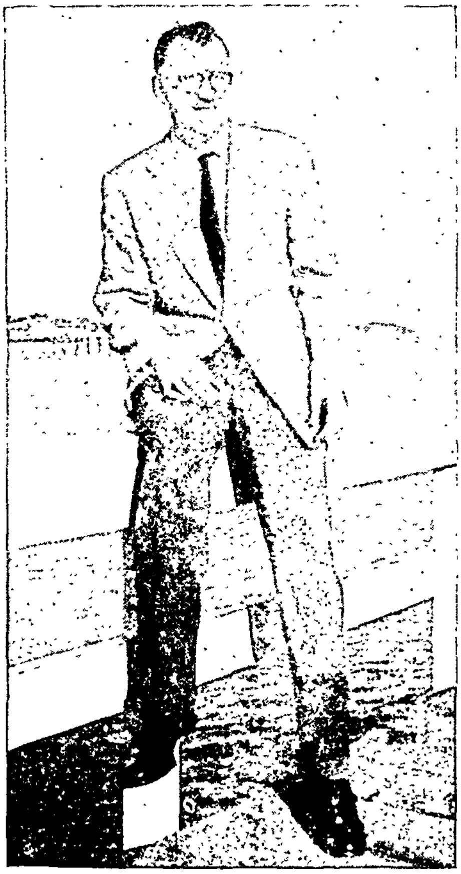
Monument to a Physician.—A monument was recently erected in the house in which Simón Bolívar died on Dec. 17, 1830. This house, known as the San Pedro Alejandrino country house, is in the city of Santa Marta. The monument was erected to the memory of Dr. Alejandro Próspero Reverend, the physician of Simón Bolívar. The monument with the bust of Dr. Reverend is a donation of the Sociedad Bolivariana de Colombia. In 1866, Dr. Reverend published in Paris a book concerning Bolívar. Dr. Reverend died in Santa Marta on Dec. 1, 1881, at the age of 85.

Personal Items.—Dr. Oswald S. Lowsley, the American urologist, came to Bogotá by invitation of the members of the Urological Society of Colombia. He reached Bogotá on January 31 of this year and remained in the city for one week. His program of scientific lectures included new trends in and development of urogenital surgery, large calculus of the ureter, apparatus for temporary substitution of the kidney, transplantation of the ureter and conservative surgery of the kidney. Dr. Lowsley was appointed an honorary member of the Urological Society of Bogotá.

CORRESPONDENCE

POLICE REQUEST HELP

To the Editor:—This department holds a felony warrant, charging murder, for Edgar Alvin (Ted) Werner, 31 years, 6 ft. 1½ in., 197 lb., brown hair, brown eyes, wears horn-rimmed glasses, possibly driving a 1947 Ford sedan coupe, 1951 California license 8-B-76406, engine no. 99A1395880, black, with F.S.C. (Fresno State College) stickers on right wind wing, spotlight and rear view mirror on left side, fog lights and drill guard. He must seek medical aid. He has a spinal cyst that continually drains. He wears a pad to absorb this drainage and uses a rubber pillow in the car. He is accused of killing his wife here by strangulation and inflicting skull fracture by use of a claw hammer.



Mr. Glenn W. Gillette, secretary, Fresno County Medical Society, suggested that we ask your assistance in having this information published in The Journal. I will appreciate anything you can do along the line suggested.

H. R. Morton,
Chief of Police, Fresno, Calif.

INTRA-ARTERIAL TRANSFUSION

To the Editor:—In view of the interest in intra-arterial transfusion, an analysis of the available evidence seems timely. Eagerness to introduce procedures merely because they are new may prove detrimental to patients. It is therefore essential that one examine the facts carefully before drawing conclusions. The only well documented article that I could find on the subject is by Robinson, Trincher and Dennis (*Surg. Gynec. & Obst.* 87:694, 1948). This article reviews the results of animal experiments and clinical observations on intra-arterial transfusions.

In the animal experiments, only nine animals were used, all of which were bled, and later given transfusions with their own blood, five by the intra-arterial route and four by the intravenous route. All nine animals survived, though one who had received an intra-arterial transfusion died of distemper two days later. The authors point out that the recovery time after intra-arterial transfusion ranged from four to 10 minutes, in contrast to intravenous transfusion, where recovery took 18 to 38 minutes. Moreover, the blood pressure attained higher levels after intra-arterial transfusion.

These experiments have the fallacy that there was a difference not only in the route of transfusion but also in the rate of blood injection. While the intra-arterial transfusions were given at a rate of 100 cc. per minute, the intravenous transfusions were given by the drip method at a rate of only 10 to 25 cc. per minute, in order, as the authors claimed, to avoid right heart failure. However, according to our own observations, persons who have just had a hemorrhage can receive blood by vein at greater rates of speed, because in such patients the venous system as well as the arterial tree is relatively empty of blood. Significantly, one of the dogs who was given a rapid intravenous infusion (500 cc. in six minutes) had recovery values closely approximating those of the dogs receiving intra-arterial transfusion.

The clinical data were based on only 12 patients, two of whom died despite the procedure and two of whom died five hours and two days later, respectively, of secondary hemorrhage. A fifth patient again went into shock one hour after the transfusion, and additional arterial and venous transfusions had to be given, after which the patient recovered. In defense of the method, one might argue that all the patients were in desperate condition, arterial transfusion having been started after venous transfusions had been supposedly ineffectual. When one examines the data, however, one finds that the amount of blood infused ranged from 250 to 1,500 cc., the rate of infusion ranging from 20 cc. to 50 cc. per minute. We have just pointed out the importance of replacement of the blood lost as rapidly as possible. By the intravenous route unmodified blood has been infused as rapidly as 500 cc. in three to five minutes by the syringe-valve method; this has also been done by inserting a three-way stopcock between the adapter and needle of the intravenous set-up and then pumping in citrated blood. Considering the far slower rates of infusion used by these workers, the results by the intra-arterial method would be expected to be inferior to the results of rapid intravenous transfusions. In addition, it is necessary to sacrifice a radial artery, and, if the procedure is to be repeated, another artery must be found (posterior tibial was used by the authors). This has resulted in some sloughing of the skin. It takes much more skill to cannulate an artery than to cannulate a vein, and in the time lost while setting up an intra-arterial transfusion, more blood could be pumped in by vein; this would be much more beneficial to the patient. Moreover, there is nothing to prevent setting up multiple intravenous transfusions as, indeed, is often done. Finally, pumping blood into the patient by air under pressure exposes the patient to the danger of air embolism; reports of deaths caused in this way have been published. The blood can be pumped in much more safely and efficiently by use of three-way stopcock and the more natural venous route.

In summary, there is no convincing evidence that intra-arterial transfusion is superior to intravenous transfusion; all the supposed beneficial effects can be explained by the greater speed of infusion. In an exsanguinated patient, citrated blood can be given by the intravenous route as rapidly as is necessary and desired by insertion of a three-way stopcock between the cannula and tubing and pumping the blood with a syringe. Intra-arterial transfusion sacrifices important arteries with resultant sloughing of the skin and is not readily repeated, and the greater time and skill required to set one up entails a loss of time that jeopardizes the patient's life. Pumping in blood by air under pressure is to be condemned because of the danger of air embolism, and deaths have been reported in the literature because of this. All methods of transfusion are futile unless the surgeon succeeds in controlling the hemorrhage. There is need for additional, carefully controlled animal experiments on intra-arterial transfusion.

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Hospitals for Profit: Liability for Nurse's Negligence During Operation.—This was an action for damages against the defendant hospital and a surgeon for injuries caused by the alleged negligence of a nurse, hired by the hospital, who assisted at an operation. The court dismissed the complaint against the surgeon but judgment was entered in favor of the plaintiff and against the hospital. Accordingly the hospital appealed to the supreme court, appellate division, first department, New York.

The plaintiff was a paying patient in defendant's private hospital which was concededly operated for profit. During an operation for the removal of an anal fistula, the plaintiff was severely burned by an electric plate which was connected with, and operated, the electro cautery knife used by the operating surgeon. Before the operation, the negative electric plate was prepared and applied under the plaintiff's body by a regular nurse of the hospital designated for the purpose by the hospital's supervisory nurse. The negative electric plate was a part of a Bove electro surgical machine which was part of the hospital equipment. The surgeon, in reserving a room for the plaintiff, had specified that he wished to make use of such a machine during the operation to be performed upon her.

The negative plate is a flat plate of malleable metal heavier than ordinary tin foil attached to which is a wire connected to the negative part of the machine. To apply the plate properly without danger of burning the patient, the plate itself must be smooth and clean and must be applied to the body with an electrolyte, in this case a current-conducting jelly which is placed on the plate in contact with the patient's body. The plaintiff's family doctor, who assisted at the operation, testified that the plate must be applied completely so that the whole surface touches the body evenly; otherwise there may be small areas not touching the body and in and around such areas electric current is concentrated and may produce burns. The plate is first placed by the nurse on the operating table and the patient put on top of the plate; the weight of the body comes down on the plate and preserves contact; the plate is usually applied by nurses as a routine matter before the doctor enters the operating room and it was so applied in this case by the hospital nurse. The current passes through a positive electrode which does the cutting; the positive pole or cutting device in the surgeon's hand is a fine wire which gets heated and cuts and coagulates but won't cut unless the negative pole is under the patient. The doctor who is to operate relies on the nursing personnel of the hospital to put the machine and plates in place before he starts the operation.

In this case the patient was unconscious during the operation. Some time after the operation was completed, it was ascertained that the plaintiff had sustained severe burns on that part of the body with which the plate had been in contact. The operating surgeon testified that it was faulty contact with the patient's body that produced the burns.

The sole issue to be decided by this case, said the appellate division, is the immunity of a private non-charitable hospital, organized and conducted for profit, for the negligent act of one of its regular nurses in connection with the medical treatment of the patient.

The appellate division cited with approval the decision of the Court of Appeals of New York in the case of Schloendorff v. Society New York Hospital, 211 N. Y. 125. In that case, the defendant was a charitable non-profit hospital, but the Court of Appeals speaking through Justice Cardozo, held that the true ground for the hospital's exemption was that the relation between a hospital and its physicians is not that of master and servant; it applied the same rule to nurses saying "It is true, I think, of nurses, as of physicians, that in treating a patient, they are not acting as the servants of the hospital. The superintendent is a servant of the hospital; the assistant superintendents, the orderlies, and the other members of the administrative staff are servants of the hospital. But nurses are employed to carry out the orders of the physicians, to whose authority they are subject. The hospital undertakes to procure for the patient the services of a nurse. It does not undertake, through the agency of nurses, to render those services itself. The reported cases make no distinction in that respect between the position of a nurse and that of a physician; and none is justified in principle." In language especially applicable to the present case, in which the accident happened by reason of the acts of preparation by the nurse immediately preceding the operation, Justice Cardozo, in the Schloendorff case, added: "The acts of preparation immediately preceding the operation are necessary to its successful performance, and are really part of the operation itself. They are not different in that respect from the administration of the ether. Whatever the nurse does in those preliminary stages is done, not as the servant of the hospital, but in the course of the treatment of the patient, as the delegate of the surgeon to whose orders she is subject. The hospital is not chargeable with her knowledge that the operation is improper any more than with the surgeon's." The appellate division therefore concluded that until the Court of Appeals expressly holds otherwise, it should follow the rule that a hospital whether charitable or private is immune from liability by reason of the negligence of a doctor or a nurse with respect to matters relating to the patient's medical care and attention. Accordingly the judgment in favor of the plaintiff and against the hospital was reversed.—*Bakal v. University Heights Sanitarium, 101 N.Y.S. (2d) 385 (New York 1950).*

MEDICAL MOTION PICTURES

See Better: Healthy Eyes: 16 mm., black and white, sound, showing time 11 minutes. Educational Collaborator, Derrick Vail, M.D., Chairman, Department of Ophthalmology, Northwestern University Medical School. Produced in 1950 by and procurable on rental or purchase from Coronet Films, 65 East South Water Street, Chicago 1.

This is an overview film which shows the construction of the eye, describes briefly the various parts and illustrates the values of good vision in the classroom. Following this, there is a description of good health and safety habits in connection with the maintenance and preservation of good vision. The advantages of medical care and frequent examination of the eye are pointed out without the description of qualifications and limitations of professional beliefs. Motivation is the primary development in the theme of the advantages and fun of having healthy eyes.

Some parts of the film are described so fast that it is difficult to understand, but it is assumed that these sequences would be elaborated on by the teacher. The film is intended primarily for intermediate grades but also may be used for good teaching below and above this level. The photography and narration are very well done.

Congenital Pulmonary Stenosis with Intact Interventricular Septum: 16 mm., color, silent, showing time 24 minutes. Prepared by Willis J. Potts, M.D., William L. Riker, M.D., and Stanley Gibson, M.D., The Children's Memorial Hospital, Chicago. Produced in 1950 by and procurable on rental from Mervin W. LaRue, Inc., 159 East Chicago Avenue, Chicago 11.

This motion picture deals with the diagnosis and treatment of congenital pulmonary valvular stenosis with intact interventricular septum. The captions are good, the operative exposure is adequate and the photography is excellent. The operative approach to the valve is through an incision in the right ventricle. The use of a new type of knife and dilator is demonstrated. Two operations are pictured, one on an adult, and the other on an infant. This motion picture is recommended to those interested in the diagnosis and treatment of valvular pulmonic stenosis.

MEDICAL LITERATURE ABSTRACTS

AMERICAN

A.M.A. Arch. Ophthalmology, Chicago

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- *Surgery of Lens in Infancy and Childhood. P. A. Chandler.—p. 125.
- Glycolytic Activity of Cornea. A. de Roetth Jr.—p. 139.
- Experimental Studies on Early Lens Changes After Roentgen Irradiation: I. Morphological and Cytochemical Changes. L. von Sallmann.—p. 149.
- Corneal Ulcer Produced by Aerobacter Aerogenes. G. Clark and D. Locatcher-Khorazo.—p. 165.
- Preliminary Note on Study of Refractive State, with Special Reference to Myopia. G. S. Pendse, V. M. Dan De Kar and L. S. Bhave.—p. 168.
- Development of Electro-Oculography: Standing Potential of Eye in Registration of Eye Movement. E. Marg.—p. 169.
- Tropophorometer: Instrument Employing New System of Coordinates for More Accurate Measurements of Heterophoria and Heterotropia. O. A. Putnam and J. V. D. Quereau.—p. 186.
- Cornea and Sclera: Review of Literature. M. L. Berliner.—p. 196.

Lens Surgery in Infancy and Childhood.—Disorders of the lens that may require surgical treatment in infancy and childhood include (1) congenital cataract, (2) traumatic cataract, (3) cataract associated with uveitis, (4) congenital dislocation of the lens and (5) microphakia or spherophakia. In congenital cataract operation is indicated if there is extensive involvement of both eyes. If vision is 20/50 or better in one or both eyes when the pupil is contracted, operation is usually not necessary. In borderline cases surgical treatment should be postponed until the child is 5 years old or more, so that one may do accurate refraction to determine whether vision is actually below the critical level. In traumatic cataract of childhood surgery need not be done immediately unless severe glaucoma develops. In many cases the lens will be completely absorbed in two or three months without interference. In cataract associated with uveitis operation is usually eventually necessary but should not be undertaken until the uveitis has been rather quiescent for a long period. In congenital dislocation of the lens and in microphakia or spherophakia operation should be postponed until the age of 5 or 6 years, when accurate refraction can be done. If vision is 20/70 or less the lens should be removed. The choice of operative procedure and methods for the avoidance of complications are discussed by the author.

A.M.A. Arch. Otolaryngology, Chicago

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- Signs, Emblems and Symbols of Choice in Plotting Threshold Audiograms. E. P. Fowler.—p. 129.
- *Hearing and Speech Problems in Children: Observations and Use of Electroencephalography. R. E. Marcus.—p. 134.
- Cholesteatomatous Cysts Secondary to Incomplete Removal of Cholesteatomatous Matrix. J. W. Begley Jr. and H. L. Williams.—p. 147.
- Radiocobalt in Otolaryngology. L. F. Morrison.—p. 153.
- *Tonsillectomy and Adenoidectomy and Poliomyelitis A. H. Miller. —p. 160.
- Structure and Function of Lamina Propria of Tympanic Membrane in Various Mammals. U. Secondi.—p. 170.
- Psychophysiology of Speech Hearing. M. Saltzman and M. S. Ersner. —p. 182.
- Unilateral Pansinal Mucocele Simulating Malignant Neoplasm: Report of Case. W. P. Anthony and H. L. Williams.—p. 189.
- Paranasal Sinuses. S. Salinger.—p. 200.

Electroencephalography in Deafness.—The diagnosis of hearing loss in the very young child is a formidable problem. The audiometer cannot be used in the usual manner, and head-turning responses of the child to loud sounds are unreliable, since they may be only coincidental. Nevertheless, it is important to detect any existing hearing defect before the age of 3 so that the child's early social development will not be retarded. One solution to this problem is the use of electroencephalography as an objective measure of auditory perception. The test is based on the fact that during sleep any sensory stimulation changes the brain wave rhythm from a "sleeping" to a "waking" pattern. The test can be performed during the afternoon nap or early in the evening, with mild sedation if necessary. A very deep sleep is not desirable, since this produces an extremely high threshold for all stimulation. After establishing a base line recording of the brain wave pattern, the examiner employs a standard series of sound stimuli. An arousal reaction, as indicated by a change in the wave pattern, is regarded as evidence of hearing perception. Electroencephalographic testing has the additional advantage of simultaneously revealing evidence of intracranial disorder, often in the temporal lobes, that explains the hearing loss and differentiates it from loss due to cochlear disease. Such evidence of intracranial disorder was found in the author's clinic in 19 of 53 children with severe hearing loss and in nine of 18 children with moderate hearing loss who had retarded or unintelligible speech. Many of the children in this study showed other clinical abnormalities, such as disorders of gait, slowed development, behavioral disturbances and strabismus. Factors of etiological significance included rubella in the mother during the first trimester of pregnancy, Rh blood type incompatibility, prematurity, twinning and brain injury at birth. Consanguinity, heredity and syphilis were not of importance in this series.

Tonsillectomy and Poliomyelitis.—The 1,229 cases of poliomyelitis occurring in Los Angeles County during the epidemic year 1949 were surveyed for determination of a possible relationship between a recent tonsillectomy and adenoidectomy operation and (1) the incidence of poliomyelitis and (2) the development of bulbar poliomyelitis. The authors hoped to determine whether the performing of tonsillectomies and adenoidectomies should be discontinued during the summer months of highest poliomyelitis incidence. The results of the statistical analysis indicate no significant deviation between the actual and the expected incidence of poliomyelitis developing in Los Angeles County during 1949 in patients having recently undergone tonsillectomy and adenoidectomy, even in the period of July through October. In view of these observations, there seems to have been no reason for discontinuance of these operations during the summer months.

American Heart Journal, St. Louis

41:1-160 (Jan.) 1951

- Hydraulic Formula for Calculation of Area of Stenotic Mitral Valve, Other Cardiac Valves, and Central Circulatory Shunts. I. R. Gorlin and S. G. Gorlin.—p. 1.
- Studies of Circulatory Dynamics in Mitral Stenosis: II. Altered Dynamics at Rest. R. Gorlin, F. W. Haynes, W. T. Goodale and others.—p. 30.
- Critical Rates in Ventricular Conduction: II. Simulation of Localized Bundle Branch Block. H. Vesell.—p. 46.
- Depression of Cardiac Pacemakers by Premature Impulses. A. Pick, R. Langendorf and L. N. Katz.—p. 49.
- Factors Influencing T Wave of Electrocardiogram: II. Effects of Drinking Iced Water. C. V. Dowling and H. K. Hellerstein.—p. 58.
- Q-T Interval of Electrocardiogram in Acute Myocarditis in Adults with Autopsy Correlation. I. W. Gittleman, M. C. Thorner and G. C. Griffith.—p. 78.
- Unipolar Electrocardiogram in Normal Infants and Children. P. N. G. Yu, H. A. Joos and C. P. Katsampes.—p. 91.
- Study of Augmented Unipolar Extremity Leads With and Without 5,000 Ohm Resistances in 500 Consecutive Unselected Patients. H. I. Griffeath and M. Sokolow.—p. 105.
- Effect of Digitoxin on V Leads. R. Beers, W. Regan and J. Jensen. —p. 115.
- Report on New Mercurial Diuretic, Cumertilin, Brand of Mercumatilin. L. H. Sigler and J. Tulgan.—p. 125.
- *Congenital Tricuspid Atresia. S. C. Sommers and J. M. Johnson.—p. 130.

Congenital Tricuspid Atresia.—Primary isolated tricuspid atresia is characterized by the absence of a right atrioventricular opening with associated interauricular and interventricular septal defects. Hypoplasia of the right ventricle is a constant finding.

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Titles marked with an asterisk (*) are abstracted.

At Henry Ford Hospital, six instances of isolated tricuspid atresia were encountered in 141 autopsies on persons with congenital heart disease. The authors describe these six fatal cases and review 31 similar cases that they collected from the literature. An abnormal superior vena cava, a right atrial Chiari's network or both were found in the six patients. The characteristic clinical findings of cyanosis and electrocardiographic left axis deviation aid in the diagnosis. Most patients die before 1 year of age because of congestive heart failure and anoxia. Tricuspid atresia may be explained mechanically by the presence of abnormal blood currents in the primitive right atrium, which allow the tricuspid ostium to close. Surgical enlargement of the associated interauricular septal defect and creation of a systemic-to-pulmonary arterial shunt are proposed as a possible means of prolonging the life of these patients.

American Journal of Medical Sciences, Philadelphia

221:121-230 (Feb.) 1951

Observations on Eosinophil Count in Man: Proposed Test of Adrenal Cortical Function. B. Fisher and E. R. Fisher.—p. 121.
Massive Doses of Amphetamine as Adjuvant in Treatment of Barbiturate Intoxication. H. A. Friedman and S. C. Harris.—p. 133.
Bromosulfalein Liver Function Test with Special Reference to Renal Excretion. J. W. Norcross, R. M. White and R. F. Bradley, Jr. —p. 137.
Measurement of Serum Cholinesterase Activity: Useful Test in Management of Acute Hepatitis. L. J. Vorhaus, H. H. Scudamore and R. M. Kark.—p. 140.
*Streptomycin Para-Aminosalicylate and Streptomycin Resistant Tubercle Bacilli. J. D. Adcock, W. F. Fidler, W. A. Meier and C. R. Owen. —p. 149.
*Cold Agglutinins: VII. Tests for Cöld Isohemagglutinins in Pneumonia and Other Acute Respiratory Infections over Four-Year Period. M. Finland and M. W. Barnes.—p. 152.
Splenomegaly in Thrombocytopenic Purpura. L. Ehrlich and S. O. Schwartz.—p. 158.
Therapeutic Suppression of Tissue Reactivity: I. Comparison of Effects of Cortisone and Aminopterin. R. Gubner.—p. 169.
Therapeutic Suppression of Tissue Reactivity: II. Effect of Aminopterin in Rheumatoid Arthritis and Psoriasis. R. Gubner, S. August and V. Ginsberg.—p. 176.
Alteration in Blood Proteins in Rheumatic Patients. J. S. Browning, R. Rice and C. Ulrich.—p. 183.
Clinical Observations on Effects of Injectable Rutin, Esculin, Adrenoxyl and Vitamin E on Capillary Fragility of Diabetic Retinopathy. B. A. Levitan.—p. 185.
Effect of Aureomycin and Flavonoid Rutin on Splenectomized Rat. P. E. Rekers and N. Marti.—p. 191.
Effect of Aureomycin upon Hodgkin's Disease. R. Goldman.—p. 195.
New Diagram for Visualization and Interpretation of Acid-Base Changes. R. B. Singer.—p. 199.
Ocular Manifestations of Diffuse Collagen Diseases. R. W. Hollenhorst and J. W. Henderson.—p. 211.
Problem of Extensive Cutaneous Burns. J. M. Walker.—p. 223.

Streptomycin Paraaminosalicylate and Streptomycin-Resistant Tubercle Bacilli.—This report is concerned with the effect of streptomycin paraaminosalicylate on streptomycin-resistant organisms in 12 patients with far advanced pulmonary tuberculosis. None of the patients had received streptomycin or paraaminosalicylic acid previously. The equivalent of 0.5 Gm. of streptomycin (0.4 Gm. of paraaminosalicylic acid) was administered intramuscularly twice daily. Tubercle bacilli were isolated from sputum and/or gastric contents on Petragnani's medium. The sensitivity of strains obtained before and during the course of therapy were determined both in Dubos liquid medium and Herrold egg yolk agar. The following concentrations of streptomycin were added to each type of medium: 0 (control), 1.0, 5.0, 10, 20 and 100 micrograms per milliliter of medium. The sensitivity of the strain under study was considered to be the lowest concentration of streptomycin that gave complete suppression of growth (no colonies or gross turbidity) after 14 days of incubation. The sensitivities of the organisms to paraaminosalicylic acid were determined in a similar manner, with egg yolk agars alone. Strains were considered to be significantly resistant when any appreciable amount of growth appeared on plates containing streptomycin in concentrations of 100 micrograms per milliliter of medium. Paraaminosalicylate had no delaying effect on the accumulation of streptomycin-resistant organisms in the 12 patients reported on in this study. The incidence and rate of appearance of streptomycin-resistant strains of tubercle bacilli were such that the authors concluded that paraaminosalicylate is ineffective in delaying the accumulation of streptomycin-resistant organisms in advanced pulmonary tuberculosis.

Cold Agglutinins.—Over a four year period tests for cold agglutinins were performed on the serums of 756 patients wit acute respiratory infections involving the lungs and tracheobronchial tree. Positive results occurred as frequently in patients from whom a single specimen was obtained during convalescence as i those from whom specimens were obtained during both th acute and convalescent phase of the disease. Significant titers o cold agglutinins were found associated only with primary atypical pneumonia and not with other acute respiratory infection Occasionally, cold agglutinins were found in patients with othe infections, but in every case there was evidence that these infections were complicated by underlying primary atypical pneumonia. No patient with uncomplicated bacterial or influenza pneumonia was found to have cold agglutinins. Not all patien with uncomplicated primary atypical pneumonia had significa titers of cold agglutinins, however. In a series of 40 patient only 75 per cent showed positive reactions to the test. The seasonal incidence of primary atypical pneumonia, as reflected in th frequency with which positive reactions for cold agglutinins appeared, followed a definite pattern throughout the period of thi study. The disease had a high incidence during the summe reached its peak in the autumn, dropped to or below the summe level during the winter and had its lowest incidence in th spring.

American Journal of Ophthalmology, Chicago

34:1-168 (Jan.) 1951

*Retrolental Fibroplasia. A. B. Reese and F. C. Blodi.—p. 1.
Neutron Cataracts. A. C. Krause and J. O. Bond—p. 25.
Healing of Incisions for Cataract Extraction. J. H. Dunnington.—p. 3
Herpes Zoster Ophthalmicus with Bilateral Hemorrhagic Retinopath R. E. Bartlett, C. S. Mumma and A. R. Irvine.—p. 45.
Osteoma of Orbit. A. B. Rizzuti.—p. 49.
Cycloelectrolysis for Glaucoma. C. Berens, L. B. Sheppard and A. Duel Jr.—p. 53.
Chronic Simple Glaucoma in the Negro. S. S. McNair.—p. 70.
Differentiation of Phi Phenomenon and Parallax: Use of Phi Phenomeno in Determination of Retinal Correspondence. D. A. Franklin.—p. 7
Eliminating Distortion Due to Prisms in Glasses. P. W. Miles.—p. 87.
Venous Aneurysms of Orbit. R. E. Teitgen and W. L. Benedict.—p. 94.

Retrolental Fibroplasia.—After discussing the acute and cicatricial phases of retrolental fibroplasia, its relationship to hemangiomas and the systemic nature of the disease, Reese and Blod review the results of microscopic examinations on the eyes o 79 premature infants who were dead at birth or died shortl thereafter. Following this they review the treatment of retrolenta fibroplasia. For the cicatricial stage they used a surgical procedure. The results obtained are discussed. For the acute phas they used two therapeutic agents: vitamin E and pituitary adrenocorticotropic hormone. The theory that retrolental fibroplasia i the result of vitamin E deficiency had to be abandoned. When i was found that retrolental fibroplasia occurred with the sam frequency in two series of patients, one treated with vitamin and the other untreated, and when retrolental fibroplasia developed in one of identical twins who received vitamin E and th other remained normal without it, the authors discontinued th use of the vitamin and tried pituitary adrenocorticotropic hormone. They explain the rationale for this treatment and say tha treatment with pituitary adrenocorticotropic hormone should b instituted only when there are signs of rapid progression, such a retinal edema or retinal detachment. Dilatation and tortuosity o the retinal vessels and fundus hemorrhages are not sufficient indications for starting this treatment. Between 20 and 25 mg. o pituitary adrenocorticotropic hormone are administered each da for 14 days. A second course was given in two cases in which th disease became reactivated after cessation of treatment. In all th 14 babies treated with pituitary adrenocorticotropic hormone th retrolental process has been arrested or has regressed. Some o the treated infants now have normal fundi; others have a smal mass of white tissue far in the periphery of the fundus. Durin the same period eight infants with progressive retrolental fibroplasia did not receive pituitary adrenocorticotropic hormone Three of these now have complete bilateral membranes, thre have partial membranes and two have small masses of white tissue in the periphery of the fundi.

American Journal of Physiology, Baltimore

164:1-300 (Jan.) 1951. **Partial Index**

Distribution, Exchange and Migration of Phosphate Compounds in Nervous System. A. J. Samuels, L. L. Boyarsky, R. W. Gerard and others.—p. 1.
Rat Electrocorticogram in Relation to Adrenal Cortical Function. J. R. Bergen.—p. 16.
Effect of Adrenal Hormones on Blood Phospholipides. D. B. Zilversmit, T. N. Stern and R. R. Overman.—p. 31.
Uptake and Conversion of Radioactive Iodine (I^{131}) by Thyroid Gland in Vivo and in Vitro in Tourniquet Shock in Rats. M. W. Hamolsky, Z. S. Gierlach and H. Jensen.—p. 35.
Arterial Pressure and Serum Protein Patterns in Adrenalectomized Hypertensive and Adrenalectomized Normotensive Dogs. I. H. Page and L. A. Lewis.—p. 61.
Experimental Hypertension. J. Allardyce, J. Salter and R. Rixon.—p. 68.
Studies on Salt Hypertension: Effects of Adrenalectomy and Nephrectomy. W. L. Brandt, W. M. Dubin and L. A. Sapirstein.—p. 73.
Reactions of Surviving Human Umbilical Arteries to 1-Epinephrine, 1-Norepinephrine, Acetylcholine and Histamine. D. I. Smith.—p. 86.
Co-Thromboplastin, Probable Factor in Coagulation of Blood. F. D. Mann and M. Hurn.—p. 105.
Effect of Removal of Liver on Blood Coagulation. F. D. Mann, E. S. Shonyo and F. C. Mann.—p. 111.
Influence of Cirrhosis on Proteins of Cisternal Lymph. J. T. Nix, E. V. Flock and J. L. Bollman.—p. 117.
Influence of Previous Dietary Protein and of ACTH on Blood Glucose Concentration of Fasting Rats. P. Handler and R. S. Georgiade. —p. 131.
Urinary Excretion of Sodium and Chloride After Splanchnicotomy: Effect on Proximal Tubule. S. A. Kaplan and S. Rapoport.—p. 175.
Glucose Utilization by Extra-Hepatic Tissues. D. R. Drury, A. N. Wick, R. W. Bancroft and E. M. MacKay.—p. 207.
Inhibition of Uptake of Radioactive Phosphate by Human Erythrocytes in Vitro. D. R. H. Gourley.—p. 213.
Rate of Absorption of Cobalt from Peritoneal Cavity and Rate of Elimination from Blood. N. I. Berlin and W. Siri.—p. 221.
Influence of Carotid Body Removal on Polycythemia and Arterial Oxygen Saturation During Discontinuous Anoxia. W. C. Grant.—p. 226.
Acute Cor Pulmonale: Experimental Study Utilizing Special Cardiac Catheter. C. T. Dotter and D. S. Lukas.—p. 254.

American Journal of Public Health, New York

41:1-138 (Jan.) 1951. **Partial Index**

Sanitation in International Health Field. H. van Zile Hyde.—p. 1.
Medical Care Insurance: Lessons from Voluntary and Compulsory Plans. Organization and Administration. F. Goldman.—p. 20.
Air Pollution—the Status Today. A. C. Stern and L. Greenberg.—p. 27.
Survival of Selected Enteric Organisms in Various Types of Soil. W. L. Mallmann and W. Litsky.—p. 38.
Use of Statistics on Prematurity in Tennessee. R. H. Hutcheson and R. R. Puffer.—p. 49.
Current Practices and Trends in Child Health Conference. S. M. Wishik. —p. 57.
Physician Participation in School Health Services: Report on Analysis of Questionnaire to Medical Societies on Physicians and Schools. R. V. Hein and D. A. Dukelow.—p. 66.
*Some Factors in Epidemiology of Histoplasmin Sensitivity in Williamson County, Tennessee. L. D. Zeidberg, A. Dillon and R. S. Gass.—p. 80.

Histoplasmin Sensitivity.—In the five year period ending July 1950, tests with histoplasmin were made of persons of all ages in Williamson County, Tenn. Positive reactions occurred in 25 per cent of those under 1 year of age then rose abruptly with age to a peak of 87 per cent in those 10 to 14 years of age. After the age of 15, the proportion of positive reactors declined steadily. At an average interval of 25 months, 506 persons who had had positive reactions to the first test were retested. Of this number, 15.8 per cent had reverted to negative by the time of the second test. Reversion rates were highest in those under 1 year of age and in those 40 years of age and over. Seasonal variation in allergy was studied only in children under 5 years of age. In this group histoplasmin sensitivity appeared to be at its lowest level in the winter and early spring. The percentage of positive reactions rose during the summer to a peak in the fall and then declined. Epidemiological investigation of 271 homes in which at least one child under 5 years of age had been tested revealed an association between positive reaction and dampness of the environment. Some explanations are offered for the described observations.

Bulletin of Johns Hopkins Hospital, Baltimore

88:119-196 (Feb.) 1951

Some Biological Implications of Studies on Influenza Viruses. F. M. Burnet.—p. 119.
Certain Aspects of Pharmacology of 3-Hydroxycinchoninic Acid. K. C. Blanchard, E. H. Dearborn and E. K. Marshall Jr.—p. 181.

Connecticut State Medical Journal, Hartford

15:99-184 (Feb.) 1951

Health Legislation and Shortage of Physicians. W. C. Davison.—p. 99.
Cancer of Stomach. L. G. Simon, A. R. Small and T. Najm.—p. 105.
Surgery in Treatment of Peptic Ulcer. W. M. Edmondstone.—p. 107.
Neurology and Physiology in Functional States. G. A. Gosselin.—p. 109.
Aureomycin in Treatment of Mumps Orchitis and Encephalitis. N. P. R. Spinelli, N. L. Cressy and P. Kunkel.—p. 113.
*Old Age and Employability. S. S. Levine.—p. 117.

Old Age and Employability.—As long as we retire the aged worker while he still possesses skill, experience, physical capacities and a desire to work we are adding to the economic burden of the younger generation and to the decline of society. The life span is increasing and aging occurs at a slower pace. Early retirement means an unnecessary waste of valuable skills and experiences. Longevity without work invites disease. The aged worker needs a feeling of economic security and of being an active member in the life of his community. During World War II, when employers were obliged to recall older workers, it was learned how much physical skill and mental ability had been wasted during previous years when many of these same workers had been retired or discharged. The author feels that old age is the problem of society as a whole.

Gastroenterology, Baltimore

17:1-132 (Jan.) 1951

Evaluation of Subtotal Gastrectomy for Gastric and Duodenal Lesions: Postoperative Survey of 100 Cases. L. Singmaster and G. C. Engel. —p. 1.
*Vagotomy as Treatment for Marginal Ulcer. G. Crile Jr. and G. M. Brown Jr.—p. 14.
Affective Response of Patient with Chronic Ulcerative Colitis to Cortisone. T. E. McKell, S. W. Tuthill and A. J. Sullivan.—p. 20.
Effect of ACTH on Nonspecific Ulcerative Colitis. H. R. Rossmiller, C. H. Brown and J. A. Ecker.—p. 25.
Relationship of Biliary Tract Disorders to Migraine. J. R. Twiss, A. R. Aronson and C. O. Fiertz.—p. 28.
*Enterogastrone Parenterally in Treatment of Peptic Ulcer: Controlled Clinical Study. F. C. Bone, C. Cassel, J. M. Ruffin and R. J. Reeves. —p. 35.
Atypical Hepatic Cirrhosis with Angiomatous Change: Report of Case. W. E. Ricketts and J. W. Greene.—p. 39.
Clinical Course of Hepatitis. H. Ducci, R. Barahona and J. Barzelatto. —p. 45.
Technical Factors Affecting Estimation of Serum Gamma Globulin by Zinc Turbidimetric Method of Kunkel. M. H. Friedman.—p. 57.
Intravenous Glucose Tolerance Before and After Vagotomy for Peptic Ulcer. G. F. Adams.—p. 63.
Gastric Secretion and Motility in Dogs Post-Vagotomy—Two Years Studies. W. R. Deaton Jr., R. W. Postlethwait and H. H. Bradshaw. —p. 72.

Vagotomy for Marginal Ulcer.—Thirty-nine patients with a diagnosis of marginal ulcer have been subjected to vagotomy at the Cleveland Clinic during the past four years. Thirty-six have been followed from six to 44 months, the average duration of follow-up being 23 months. There were no operative or hospital deaths. In five patients who had symptoms suggestive of marginal ulcer but no objective evidence of this condition the results were poor. It was concluded that the original symptoms in these patients were functional in origin. Good results were obtained in 26 of 31 patients with objective evidence of marginal ulcer. Two patients who were improved following treatment now have no evidence of marginal ulcer but continue to have some atypical abdominal distress. In two there have been symptoms suggesting recurrent ulceration, but an ulcer cannot be demonstrated. In one case a marginal ulcer recurred and required a second operation. In gastrojejunocolic fistula, vagotomy coupled with simple repair of the fistula or occasionally combined with gastric resection has proved to be a safe and satisfactory method of treatment. Since results of vagotomy in the treatment of marginal ulcer are at least comparable to those following extensive gastric resection, its safety commends it as a standard treatment of marginal ulcer occurring after either gastric resection or gastroenterostomy.

Enterogastrone in Peptic Ulcer.—Evidence concerning the value of enterogastrone is conflicting. In an attempt to determine the effectiveness of enterogastrone in peptic ulcer, the authors studied 36 patients with typical history of peptic ulcer. Only severe cases in which there had been no response to adequate medical treatment were selected. Every patient was considered a candidate for operation, and all had had chronic, recurrent ulcer for at least two years, with an average duration of 11 years. Each had a minimum of two recurrences in the preceding 12 months, and all had active ulcer symptoms at the beginning of the study. Many of the patients had had complications of ulcer in the past: 17 had had at least one hemorrhage; three had been operated on for perforation, and two had had gastroenterostomies. Prior to the institution of therapy 33 of the 36 patients had roentgen evidence of ulcer. Each of the three remaining patients had typical ulcer histories. Of the 36 patients, 20 were given enterogastrone, the other 16 a placebo. Those conducting the study did not know which was enterogastrone and which the placebo until the final results had been evaluated. Similar results were obtained in both groups. Slightly over half of each group improved during the treatment period, and the majority lapsed into the pretreatment state when the preparations were discontinued. No significant difference in roentgen findings, gastric acidity or volume of secretion was found between the enterogastrone and the control group. It was concluded that the preparation of enterogastrone used in this study is ineffective in the treatment of patients with peptic ulcer.

Journal of International College of Surgeons, Chicago

15:111-252 (Feb.) 1951

Gravitational Leg Ulcers and Allied States. H. Kelikian.—p. 111.
*Chronic Arteriomesenteric Duodenal Ileus. D. Telford.—p. 129.
Lipoma of Colon Simulating Carcinoma. H. E. Bacon and J. Laurens.—p. 136.
*Barium Modification with Methocel in Diagnosis of Bowel Lesions. M. M. Marks.—p. 143.
Acute Pancreatitis. J. G. Probstein.—p. 147.
*Impending Death Under Anesthesia. M. Thorek.—p. 152.
Stainless Steel Cranioplasty. M. Scott and H. T. Wycis.—p. 161.
Education of Biliary Surgeon. N. W. Thiessen.—p. 172.
Thrombocytopenia Purpura: Review of 53 Cases. M. Behrend, A. Behrend, M. Brylawski and I. Woldow.—p. 176.
Transplantation of Psoas Muscle in Correction of Urinary Incontinence. F. Stefani.—p. 180.
Cooper Ligament Operation for Inguinal Hernia. L. F. Watson.—p. 184.
Impacted Fractures of Neck of Femur. G. J. Garceau and H. W. Sigmond.—p. 188.
Some Simple Thoracic Emergencies. T. J. Kinsella.—p. 194.
Thermal and Fluid Therapy of Atomic Bombing Injuries. F. M. Allen.—p. 201.
Obstructive Jaundice Due to Benign Tumor of Extrahepatic Bile Ducts: Report of Case. J. Zaslow and R. W. Lorry.—p. 212.
Nephroptosis: Some New Etiologic Conceptions. C. O. Miller.—p. 219.

Arteriomesenteric Ileus.—A survey of hospital records in Vancouver, British Columbia, showed that approximately one patient is operated on every two months in this city for chronic arteriomesenteric ileus (Wilkie's syndrome). The mild form of the disease occurs occasionally and the severe form rarely. The disease is a complication of splanchnoptosis in a great majority of cases; occasionally it is a complication of a congenital anomaly, such as poor mesenteric attachment. Obstruction of the duodenum is caused by a taut arteriomesenteric band compressing the termination of its horizontal part. Diagnosis is suggested by the history, the physical habitus of the patient and the symptoms, but roentgen evidence is essential to the diagnosis. Positive roentgen signs of obstruction are excessive retroperistalsis, stasis and excessive dilatation proximal to the point where the mesenteric root crosses the duodenum. The disease should be classified as mild, moderate or advanced. Treatment of the mild condition is medical; in the moderate type, medical treatment should be tried before surgery is decided on. The advanced condition is best treated surgically. Laparotomy should be performed with thorough exploration, establishment of a duodenojejunostomy and, occasionally, surgical procedures directed toward the cure of concomitant disease, such as peptic ulcer or cholecystitis. The prognosis of chronic arteriomesenteric ileus is usually favorable, if proper treatment is given.

Barium Modification with Methylcellulose (Methocel).—When barium sulfate and 2.5 per cent of methylcellulose (methocel) are well mixed and added to water, a permanent suspension is formed that does not inspissate or form impactions in the bowel. This solution is well tolerated by the digestive tract. The deflocculated barium, because of its more even and finer dispersion, gives greater roentgenologic opacity. This is of particular use in the differentiation of gastric lesions, which sometimes are missed or misinterpreted by roentgen examination. The increased contrast localizes intrinsic bowel lesions. Greater mucosal detail is demonstrated by the use of this mixture, and a third-dimensional effect is obtained when air contrast studies are done. Diverticula are well coated and empty. Malignant invasion of the bowel wall can more easily be demonstrated. Diseased bowel may easily be differentiated from the uninvolved parts and progress followed with greater assurance.

Impending Death Under Anesthesia.—Cardiac and respiratory arrest is a rare complication of the administration of anesthetics, particularly of spinal anesthesia. The increasing use of the latter method makes it imperative for surgeons to be prepared for this emergency. Complete equipment for resuscitation should be at hand, and the entire surgical team should be rehearsed in its use. Even if the abdomen or the thorax has not already been opened, the surgeon is justified in making the opening to reach the heart directly. If the heart has stopped or is fibrillating, the surgeon should begin cardiac massage instantly. Speed is vital. Three methods of manual massage are described: the standard method, using an abdominal approach in the midline from the xiphoid process; Nicholson's method, using a buttonhole incision in the diaphragm, and the intercostal approach of Lampson, which is useful in the treatment of fibrillation when complete arrest has not occurred. The case is reported of a woman aged 23 who was under spinal anesthesia for an appendectomy when cardiac and respiratory arrest occurred before the operation was begun. The diaphragm and pericardium were opened, and cardiac massage was instituted together with intracardiac injections of epinephrine and the use of artificial respiration. The total period of arrest was 19 minutes. Satisfactory activity of the heart having been resumed, appendectomy was performed. The patient remained in deep coma for four days and had a stormy postoperative course but recovered completely and recently gave birth to a healthy infant. This favorable end result is added evidence of the reversibility of cerebral damage resulting from prolonged anoxia. The importance of reflex action through the pathway from the pericardium by way of the phrenic nerve to the superior cervical ganglion is emphasized. Both clinical and experimental data support the concept of a gradient of susceptibility as the neuraxis descends from the cerebral cortex to the spinal cord.

J. Lab. and Clin. Medicine, St. Louis

37:1-164 (Jan.) 1951

The Inquiring Physician. W. W. Spink.—p. 2.
Studies of Coproporphyrin: V. Isomer Distribution and per Diem Excretion of Urinary Coproporphyrin in Cases of Cirrhosis of Liver. C. J. Watson, D. Sutherland and V. Hawkinson.—p. 8.
Id.: VI. Effect of Alcohol on per Diem Excretion and Isomer Distribution of Urinary Coproporphyrins. D. A. Sutherland and C. J. Watson.—p. 29.
Studies of Liver Function Tests: II. Derivation of Correction Allowing Use of Bromosulfalein Test in Jaundiced Patients. L. Zieve, M. Hanson and E. Hill.—p. 40.
Effect of Aureomycin on Urobilinogen Formation and Fecal Flora. V. M. Sborov, A. R. Jay and C. J. Watson.—p. 52.
In Vitro Sensitivity to Eight Antibiotics of Streptococci and Staphylococci Recovered from Cases of Bacterial Endocarditis. M. Hamburger and D. Muething.—p. 60.
Streptomycin-Resistant Coliform Bacilli in Stools of Tuberculous Patients Treated with Intramuscular Streptomycin. M. Hamburger, J. R. Berman, L. Stein and others.—p. 64.
*Primary Pneumococcic Pneumonia at the Cincinnati General Hospital, 1936-1950. R. T. Thompson, J. M. Ruegsegger, M. A. Blankenhorn and M. Hamburger.—p. 75.
Influenza Viral Infections in Boston, September 1937 to August 1949: Study of Serologic Response of Patients and of Antigenic Differences Among Influenza Viruses That Were Isolated. M. Finland, M. W. Barnes and E. B. Wells.—p. 88.
Observations on Epidemiology of Infectious Hepatitis. E. M. Cree and J. W. Brown.—p. 104.
Radioactive Di-Iodo^{131}-Fluorescin: Health Physics Aspects of Its Use for Diagnostic Studies. G. V. LeRoy, W. R. Tweedy and M. Ashkenazy.—p. 122.
pH of Whole Arterial Blood. R. H. Wilson.—p. 129.
Effect of Cortisone in Glomerulonephritis and Nephropathy of Disseminated Lupus Erythematous. B. I. Heller, W. E. Jacobson and J. F. Hammarsten.—p. 133.
Analysis of Normal Guinea Pig Lung for Factors Determining Pulmonary Edema and Congestion. A. Hemingway and G. S. Campbell.—p. 143.

Pneumococcic Pneumonia.—Thompson and associates review observations on 3,205 patients with primary pneumococcic pneumonia treated at the Cincinnati General Hospital from 1936 to 1950. Of these patients, 43.5 per cent were 13 to 39 years old, 35.4 per cent were 40 to 59 years old and 21.0 per cent were 60 years old or older. The annual number of cases decreased from 387 in 1936-1937 to 100 in 1949-1950. The mortality rate was 32.5 per cent during the three year period of serum treatment, 16.9 per cent during the six years of sulfonamide treatment, 13.0 per cent during the two years of combined sulfonamide and penicillin treatment and 8.6 per cent during the three years of penicillin treatment. The mortality of the older patients was greater than that of the middle aged or younger patients. Type 3 caused the greatest number of deaths in each of the first seven years of the study. Type 7 became the most virulent type in the three years after that. Type 1 and type 7 caused an equal number of deaths in 1943-1944, and type 7 led as cause of death in 1944-1945 and 1945-1946. Type 8 caused three deaths in 1946-1947, and, in the last three years, no type was outstanding as a cause of death. Type 1 was the most frequent pneumococcus in eight years; type 7 was most frequent in three years; types 1 and 7 were equally frequent one year, and types 2 and 3 were most frequent one year each. White patients showed a greater mortality than Negro patients. However, this was largely due to the large proportion of white patients in the older age group. The various modes of therapy had no effect on the frequency of pneumococcus bacteremia or purulent complications. Bacteremia occurred in 22.8 per cent of the cases, and purulent complications occurred in 7.1 per cent.

Journal of Thoracic Surgery, St. Louis

21:1-110 (Jan.) 1951

Nonspecific Pneumonitis of Left Upper Lobe (Simulating "Middle Lobe Syndrome" and Producing Early Superior Pulmonary Sulcus Syndrome). W. M. Ashe, J. R. McDonald and O. T. Clagett.—p. 1.
Exfoliative Cytology: Adjunct in Diagnosis of Bronchiogenic Carcinoma. E. Jackson, F. Bertoli and L. V. Ackerman.—p. 7.
Eosinophilic Granuloma of Rib with Case Report. H. A. Kipp and E. R. Fisher.—p. 24.
Congenital Absence of Pericardium: Case Report. B. G. P. Shafiroff. —p. 30.
Resection Versus Thoracoplasty in Treatment of Pulmonary Tuberculosis. A. J. Beatty and W. W. Buckingham.—p. 34.
Blood Volume and Extracellular Fluid in Tuberculosis. E. B. Hay, C. R. Hay and D. E. Jenkins.—p. 42.
*Sudden Death Occurring Immediately After Operation in Patients with Cardiac Disease, with Particular Reference to Role of Aspiration Through Endotracheal Tube and Extubation. H. B. Shumacker Jr. and L. J. Hampton.—p. 48.
*Pneumoperitoneum in Differential Diagnosis of Diaphragmatic Hernia. R. C. Clay and C. R. Hanlon.—p. 57.
*Cartilaginous Tumors of Ribs and Sternum. L. W. O'Neal and L. V. Ackerman.—p. 71.

Sudden Death After Operation.—This report is concerned with five patients who died suddenly after operation. All five operations were performed with the patient under endotracheal anesthesia; intubation was easily carried out and the respirations were assisted by manual compression of the bag. In all the anesthesia was light at the close of the procedure and at the time of the terminal aspiration through the endotracheal tube or extubation. All the patients had cardiac disease. Two had tetralogy of Fallot, one probably a ventricular septal defect and possibly a small patent ductus arteriosus, one a coarctation of the aorta and one auricular fibrillation and myocardial damage. Four of the patients were children, one an adult. Except possibly for the fact that all had myocardial disease or congenital malformation, the most significant factor is that these sudden disastrous changes occurred during suction on a tube passed into the trachea through the endotracheal tube or during extubation. Investigators who demonstrated electrocardiographic changes during endotracheal manipulations attributed these changes to a vagovagal reflex initiated by the mechanical irritation of the respiratory tract. Cardiac arrest has been produced in dogs by vagal stimulation, provided hypoxia existed. These considerations allow at least a tenable hypothesis that aspiration through the intratracheal tube and withdrawal of the tube at the close of the operation might conceivably bring about cardiac arrest by decreased oxygen saturation with resultant increase in susceptibility to vagal reflexes. The authors realize that this problem is not settled but hope that this report may foster a general awareness of it and stimulate investigations on its cause and prevention.

Pneumoperitoneum in Diagnosis of Diaphragmatic Hernia.—Clay and Hanlon used pneumoperitoneum as a diagnostic aid in four cases of diaphragmatic hernia simulating intrathoracic tumor or cyst. The lesions had been detected by routine roentgenography of the chest, and in every instance thoracotomy had been advised as a diagnostic or therapeutic measure. Increasing use of mass radiological surveys has resulted in the detection of numerous asymptomatic thoracic lesions, which present a vexing problem in diagnosis and treatment. Since in many of these lesions thoracotomy is primarily diagnostic, operation could often be avoided if more accurate nonsurgical diagnostic measures were available. In the four cases under discussion there was uncertainty not only as to the nature of the lesion but also as to its position relative to the diaphragm. In these circumstances pneumoperitoneum proved to be a simple and valuable diagnostic maneuver. The authors briefly describe the technique of inducing pneumoperitoneum and present the histories of the four patients. They admit that pneumoperitoneum is not entirely without danger, since fatal air embolism has been known to result from it. This, however, can be avoided, and a carefully performed diagnostic pneumoperitoneum is a relatively safe procedure that may enable one to avoid the hazard and inconvenience of diagnostic thoracotomy.

Cartilaginous Tumors of Ribs and Sternum.—A tabulation of 96 cases of chondroma, osteochondroma and chondrosarcoma of the chest wall includes 11 observed by the authors themselves. This is not a complete review of the literature, the aim being merely to collect enough cases to permit statistical conclusions. The low incidence of these types of tumors is indicated by the numerous authors reporting a single case. Sixty of the tumors in this series, including the 11 cases observed by the authors, had been diagnosed as malignant. The remaining 36 were designated as benign, but the authors believe that many of these were also malignant. Male patients predominated in the group with the malignant chondrosarcomas as well as in the group with the benign chondroma or osteochondroma. A tumor mass was the first symptom in two thirds of the patients. Pain was usually local, pleuritic or neuritic. Roentgenographically, the distinguishing feature of peripheral chondrosarcoma is the presence of large masses arising from bone with irregular spotty flecks of calcification. Central chondrosarcomas are demonstrated as thin-walled cavities near the ends of long bones. Irregular scattered foci of calcification may be seen in the radiolucent cavity. When the thinned-out cortex is perforated, there may be "sun ray" spicules of bone arising from the surface. Most of the tumors, even the malignant ones, are encapsulated to some degree. This encapsulation is treacherous, since when the tumor is enucleated satellite nodules or portions of the malignant perichondrium may be left behind. Preoperative differentiation between benign and malignant cartilaginous tumors cannot be made with certainty. Adequate radical resection of chondrosarcoma arising in ribs and sternum entails removal of a long segment of bone of origin, its periosteum, adjacent muscle, underlying pleura and, usually, adjacent bony structure.

Kentucky Medical Journal, Bowling Green

49:55-96 (Feb.) 1951

Uses and Abuses of Clinical Laboratory. M. C. Darnell.—p. 55.
Accuracy of Diagnosis of Jaundice. S. T. Simmons.—p. 60.
Prostatectomy Today. R. Lich Jr.—p. 63.
Cancer of Oral Cavity. E. B. Mersch.—p. 69.
Bronchiectasis in Childhood. W. J. Temple.—p. 73.

Military Surgeon, Washington, D. C.

108:91-180 (Feb.) 1951. **Partial Index**

Medical Aspects of Military Parachuting. S. H. Neel Jr.—p. 91.
Disease and Command Responsibility. P. H. Long.—p. 106.
Doctors and Defense. J. C. Sargent.—p. 109.
Use of Anticoagulants in Military Medicine. I. S. Wright.—p. 113.
Flight Feeding. B. M. Ryan.—p. 125.

Missouri State Medical Assn. Journal, St. Louis

48:97-160 (Feb.) 1951

Early Diagnosis of Cancer: Biopsy. E. J. Jordan and E. L. Keyes.—p. 97.
Pancreatic Dysfunction and Liver Disease. W. A. Knight Jr., R. O. Muether and V. Moragues.—p. 101.
Treatment of Headache. R. E. Ryan.—p. 106.

Nebraska State Medical Journal, Lincoln

36:37-80 (Feb.) 1951

Chronic Cor Pulmonale. A. Sachs, W. J. Reedy and J. R. Walsh.—p. 39.
Management of Coronary Heart Disease. F. W. Niehaus.—p. 47.
*Clinical Value of Multiple Unipolar Precordial Leads in Diagnosis of Myocardial Infarction. S. Merlis and A. L. Smith.—p. 50.
Myocardial Failure Complicating Pulmonary Insufficiency. J. Ritter.—p. 55.
*Intradermal Analgesia. J. R. Kovarik and W. J. Hegedus.—p. 59.

Electrocardiographic Diagnosis of Myocardial Infarction.—An electrocardiogram in which the three standard leads are within normal limits does not rule out the possibility of myocardial damage. For proper evaluation of the cardiac status of a patient, six precordial unipolar leads, in addition to the standard leads, should be the minimum. The five patients reported on showed indefinite evidence or no findings of myocardial infarction in the standard leads, while the six unipolar precordial leads showed unequivocal findings of myocardial infarction. The authors believe that three standard leads, six unipolar precordial leads and three augmented unipolar extremity leads should be used in the electrocardiographic examination of every patient suspected of myocardial damage. It is emphasized that the electrocardiogram is only one part of a clinical examination.

Intradermal Analgesia.—Intradermal analgesia was used as a method of relieving pain of childbirth in 29 women, including primiparas and multiparas. Either 1½ per cent piperocaine hydrochloride (metycaine hydrochloride®) in isotonic solution of sodium chloride or 1 per cent procaine hydrochloride in isotonic sodium chloride solution with 1:250,000 epinephrine was injected intradermally on the anterior abdominal wall. The initial wheal was made approximately one fingerbreadth above the top of the symphysis, was continued parallel to Poupart's ligament intradermally to the level of the anterior superior spine bilaterally and was finally continued up the midline to within two fingerbreadths of the umbilicus. After the patient was turned on one side, a wheal was made intradermally at the base of Michaelis' rhomboid and was extended intradermally in the shape of a V to the posterior superior spines. A total of 45 to 60 cc. of solution was used. Results showed that intradermal analgesia was effective for the relief of pain during the first stage of labor. The duration of the analgesia was less than three hours. No ill effects were noted in mother or child. The length of labor was apparently shortened. This method is recommended for trial by the obstetrician.

New England Journal of Medicine, Boston

244:161-198 (Feb. 1) 1951

Intrapancreatic Obstruction. C. W. Wainwright.—p. 161.
*Cerebral Pseudotumor or Intracranial Hypertension of Unknown Cause: Report of Three Cases. C. W. Elkins and F. J. Rack.—p. 171.
Acute Porphyria: Report of Case Showing Ineffectiveness of ACTH. J. E. Oltman and S. Friedman.—p. 173.
Function of Suburban Hospital in Civil Defense: The Concord Plan. S. C. Dalrymple and F .C. McDonald.—p. 175.
Fifty Years of Medical Progress; Medicine as a Science: Pediatrics. R. M. Smith.—p. 176.

Cerebral Pseudotumor.—The cause of increased intracranial pressure is readily determined in most cases. However, attention is called to a syndrome called cerebral pseudotumor or intracranial hypertension of unknown etiology, which shows the signs and symptoms of an intracranial space-occupying lesion that cannot be demonstrated by any diagnostic procedures. The authors studied three cases in which the cause for persistent or intermittent intracranial pressure could not be determined. Signs and symptoms were similar: lethargy, severe headache, blurring of vision, vomiting and papilledema. The spinal fluid pressures were highly elevated, and the fluid was crystal clear, without great increase in cell count. There was no fever, leukocytosis or other evidence of inflammation. Ventriculograms revealed no significant abnormalities. The most likely diagnosis in each case seemed to be brain tumor, but there were no localizing signs. The first patient was operated on, and the brain was found to be under increased pressure, but no tumor was revealed. The patient died three days later. Autopsy failed to reveal any significant abnormalities. In the second patient, simple subtemporal decompression controlled the symptoms and restored vision. In the third case three decompressions were performed, but the intracranial pressure was still capable of rising sufficiently to produce severe headache, and only a slight improvement was observed. Failure of the autopsy to reveal abnormality in the first case and the course of the other patients lead the authors to believe that these were cases of the syndrome known as cerebral pseudotumor or intracranial hypertension of unknown cause. When pseudotumor of the brain is suspected, procedures for lowering intracranial pressure, such as dehydration and repeated spinal fluid drainage, may sometimes control the disease. Advancing papilledema with decrease in visual acuity and intractable headache may make decompressive intervention imperative.

New Jersey Medical Society Journal, Trenton

48:45-90 (Feb.) 1951

Congenital Heart Disease: II. Angiocardiography, Aortography and Cardiac Catheterization. D. F. Downing, N. A. Antonius, S. Parent and others.—p. 47.
Obstruction to Nasal Breathing Caused by Enlarged Plicae. E. Reeves.—p. 51.
Dicumarol Therapy. S. Shapiro and M. Weiner.—p. 52.
Uterine Suspension: Supplemental Report. M. E. Baker.—p. 56.
Surgery of Extremities in Cerebral Spastic Disorders. S. Keats.—p. 57.
Congenital Atresia of Esophagus with Tracheoesophageal Fistula: Report of Successful Operative Result. E. A. O'Neill.—p. 60.
Operative Recovery of Multiple Atresia at Ileo-Cecal Area. E. R. Ristine, A. S. Hansen and E. R. Principato.—p. 65.
Nutrition in Childhood. S. Blaugrund.—p. 70.
Roentgen Findings in Diagnosis and Management of Infantile Scurvy with Report of Three Cases. L. S. Ellenbogen, A. C. Crowe and M. Green.—p. 73.
Hypoprothrombinemia—with Case Report. A. E. Abramo, L. De Yoe and M. Notkin.—p. 77.

New Orleans Medical and Surgical Journal

103:279-322 (Jan.) 1951

"Our Aims": Address of the President, Surgical Association of Louisiana. I. Cohn.—p. 279.
*Culdocentesis. D. W. Beacham and W. D. Beacham.—p. 283.
*Partial Excision of Inferior Vena Cava in Suppurative Pelvic Thrombophlebitis. J. H. Collins, W. J. Baggs and R. C. Ball.—p. 288.
*Nitrogen Mustard in Treatment of Advanced Carcinoma of Lung: Analysis of 68 Cases. W. B. Ayers.—p. 290.
Radical Surgical Treatment of Carcinoma of Cervix: Analysis of 32 Cases. J. C. Weed.—p. 294.
The Charity Hospital Chest X-Ray Unit: Value of Routine Photoradiography. S. Jacobs.—p. 298.
Allergic Basis of Certain Otorhinolaryngologic Complaints. J. R. Anderson.—p. 302.
Diagnosis and Treatment of Macrocytic Anemia. G. A. Goldsmith.—p. 309.

Culdocentesis.—This is a report on an estimated 500 patients who have undergone culdocentesis at the Charity Hospital at New Orleans. Aspirations have been performed in the majority of patients suspected of having hemoperitoneum or abscesses in the cul de sac. The patient is placed in the lithotomy position for abdominopelvic examination. After palpation, the speculum is inserted so as to expose the cervix and posterior fornix. The posterior lip of the cervix is grasped and elevated. The posterior fornix is sponged dry, and an antiseptic solution is applied. The needle is thrust into the center of the cul de sac or into the previously felt mass therein. The depth of insertion has rarely exceeded 2 cm. Suction is applied with the syringe. If no fluid is obtained, the suction is maintained as the needle is slowly withdrawn. In a total of 194 cases blood was aspirated and laparotomy was performed. The great majority of the patients had extrauterine pregnancies. It is in the diagnosis of hemoperitoneum due to this condition that aspiration has been of greatest value. Prior to 1947 culdocentesis as done in less than 30 per cent of cases of suspected ectopic pregnancy, and the accuracy of preoperative diagnosis was less than 65 per cent. During the last 13 months, aspirations were performed on 90 per cent of the patients presumed to have ectopic pregnancy, and the preoperative diagnosis was correct in 95 per cent of the cases. Culdocentesis failed in nine of the 194 patients with hemoperitoneum in which it was attempted. In the total number of over 500 aspirations of the cul de sac, there were only six cases in which an unwarranted laparotomy was done. No death occurred as the result of culdocentesis, no malignancies have been spread and in the 15 patients who had uterine pregnancies there have been no abortions.

Partial Excision of Vena Cava.—A case is reported in which the inferior vena cava was resected immediately below the renal veins for suppurative thrombophlebitis. The patient's postoperative response was in no way different from similar cases in which simple ligation of the vena cava has been performed. This demonstrates that the veins may be safely resected when involved in inflammatory disease, as well as in tumors, as had been previously reported.

Nitrogen Mustard in Advanced Carcinoma of Lung.—The 68 patients with advanced pulmonary carcinoma whose cases are reviewed in this paper were treated with the "bis" nitrogen mustard. The methyl-bis (β-chlorethyl) amine hydrochloride compound was preferred, because it causes less local reactions (venous thromboses) than does the "tris" compound. All but nine of the 68 patients were men. A course of treatment consisted of a daily dose of nitrogen mustard in an amount calculated on the basis of 0.1 mg. per kilogram of body weight, for four days. In the 17 patients in whom the course was repeated, this was done at intervals from eight to 16 weeks. The results in the present series have been similar to those of others; that is, about 40 to 50 per cent of patients with advanced carcinoma of the lung have transient relief of symptoms and occasional improvement in objective signs, such as relief of dyspnea and cough, decrease in sputum and hemoptysis, and increase in strength, appetite and weight. With rare exceptions, this improvement lasts from one week to a few months at most, and relapse always follows. The author feels that the "bis" nitrogen mustard may be considered a good adjunct to palliative therapy of carcinoma of the lung and that it is worth a trial in every case, for there is no way, at present, to predict its effectiveness in an individual patient.

New York State Journal of Medicine, New York

51:297-424 (Feb. 1) 1951

Family Utilization of Health Resources in Rural Areas. O. F. Larson, D. G. Hay, W. C. Levy and W. E. Mosher.—p. 335.
Public Health Aspects of Heart Disease. H. E. Hilleboe and I. J. Brightman.—p. 341.
Treatment of Syphilis from New Drug Standpoint: Changes Necessary in Handling Venereal Disease Patient. B. I. Kaplan and J. Ryan.—p. 346.
Tuberculosis Control in Mental Institutions. J. Katz, R. E. Plunkett and H. B. Lang.—p. 349.
Coordination of Health Education Program and What Makes It Click. G. W. Larimore.—p. 353.
Relationship of Child Health Conferences to Private Practice of Medicine. R. A. Higgons.—p. 355.
Medical Rehabilitation Program as Its Relates to the General Practitioner. A. M. Bahlke.—p. 357.
*Milkborne Poliomyelitis Episode. M. Lipari.—p. 362.
Management of Acute Small Bowel Obstruction. E. B. Mahoney and C. D. Sherman Jr.—p. 370.
Management of Regional Lymph Node Metastases. G. W. Taylor.—p. 376.
Diabetic and Arteriosclerotic Gangrene. J. B. McKittrick—p. 379.
Metabolic Studies in Patients with Traumatic Spinal Cord Injuries with Special Reference to Glucose Tolerance and Liver Function. A. W. Cook and H. A. Lyons.—p. 383.
*Further Studies on Treatment of Common Cold with Antihistaminic Drugs. C. R. Shaw and H. B. Wightman.—p. 387.
Antistreptolysin Titer as Aid in Diagnosis of Rheumatic Fever. B. B. Breese and H. Gray.—p. 389.
Management of Cancer of Penis. A. Goldey.—p. 392.

Milk-Borne Poliomyelitis Episode.—A sudden, circumscribed, unseasonal epidemic of poliomyelitis occurred in October and November 1949 in the northeastern section of Delaware County, New York. Twenty-three cases of poliomyelitis were reported from the epidemic area, which had a population of 3,000 and included several villages. Milk and/or cream from dairy "C" of one of the villages was suspected to be the medium of transmission in this epidemic. Two other milk-borne poliomyelitis outbreaks had been recognized in New York State in previous years. The present study yielded some epidemiologic support to the suspicion that the consumption of dairy "C" milk caused 13 of the 23 paralytic cases and nine of the 17 nonparalytic cases in this epidemic. There is evidence that the cases due to contact spread complemented the milk-borne cases. In spite of the suggestive circumstances associated with this epidemic and the epidemiologic evidence, which supports the possibility that dairy "C" milk caused some of the paralytic and nonparalytic cases in this epidemic, the author realizes that his study is subject to challenge on a few points for which evidence was either difficult or impossible to obtain.

Common Cold Treated with Antihistaminic Drugs.—Treatment of the common cold with antihistamine drugs was studied in 911 college students. The subjects were divided approximately into thirds, half of each group receiving an antihistamine preparation and half receiving a placebo. In one group, 2-phenyl benzyl amino-methylimidazoline hydrochloride (known as A) was given in a daily dose of 50 mg. In another group, the subjects were given 2-dimethylaminoethyl -3-thenylaminopyridine hydrochloride (known as B), a stronger antihistamine, in a daily dose of 15 mg. The third group was given 1-phenyl-1-alphapyridyl-3-dimethylamino-propane (known as C), a popular "over-the-counter" antihistamine sold for the treatment of colds. After three days of medication no definite trend in improvement was evident in the treated patients as compared with those receiving an inert placebo or acetylsalicylic acid. The beneficial effects of antihistaminic drugs in treatment of the common cold appear questionable.

Oklahoma State Medical Assn. J., Oklahoma City

44:1-44 (Jan.) 1951

Some Pitfalls in Diagnosis and Treatment of Carcinoma of Cervix. J. S. Bouslog.—p. 3.
Current Misconceptions in Conservative Pelvic Surgery. C. H. Tyrone.—p. 10.
Study and Investigation of Etiology and Treatment of Peptic Ulcer. F. M. Duffy.—p. 14.

44:45-80 (Feb.) 1951

*Intravenous Procaine in Promotion of Diuresis in Toxemias of Pregnancy: Preliminary Report. M. J. Serwer, R. F. Redmond, A. N. Vammen and others.—p. 48.
Management of Hydronephrosis Due to Upper Urinary Tract Obstruction. H. S. Browne.—p. 51.
Rupture of Bladder and Urethra. V. J. O'Conor.—p. 53.
Renal Lithiasis: Prevention of Recurrence. J. E. Miller.—p. 56.

Intravenous Procaine Hydrochloride as Diuretic in Toxemia.—Procaine hydrochloride was administered intravenously to 13 women. Two had toxemia superimposed on glomerulonephritis. Six had postpartum eclampsia. Five had antepartum eclampsia or preeclampsia. In the eclamptic patients the periods of anuria varied from eight to 15 hours before the procaine was given. All patients had received previously the usual treatment, consisting of sedatives and intravenously administered dextrose. Then 500 mg. of procaine hydrochloride dissolved in 200 cc. of 5 per cent dextrose in water was administered over a period of less than 15 minutes. In four patients no diuresis was obtained with the first administration of the drug, which was repeated in each patient in periods from six to 12 hours. With the second administration of procaine hydrochloride diuresis occurred in each instance. There was a latent period varying from one to two hours before diuresis. In one instance the total urine excreted in 24 hours after previous anuria was approximately 3,800 cc. In patients previously given barbiturates no toxic effects were noted. Nervousness and apprehension following procaine hydrochloride administration in two patients were readily controlled with barbiturates. In one instance the administration of morphine sulfate decreased appreciably the rate of diuresis during the administration of procaine hydrochloride. Preliminary studies on the effects of procaine hydrochloride on kidney function indicated a change in renal plasma flow, glomerular filtration rate and tubular function.

Pennsylvania Medical Journal, Harrisburg

53:1233-1392 (Dec.) 1950

Present Status of Antibiotic and Chemotherapeutic Agents in Surgery. W. A. Altemeier.—p. 1257.
Aureomycin, Chloramphenicol, and Terramycin. H. F. Flippin.—p. 1262.
Clinical Use of Neomycin: Preliminary Report. J. R. Wolgamot and G. G. Duncan.—p. 1264.
Infections of Hand. L. K. Ferguson.—p. 1269.
Diagnosis and Treatment of Allergic Rhinitis. M. W. Miller.—p. 1274.
Poliomyelitis: Study of 320 Cases. E. E. Nicholls.—p. 1278.
Management of Patients with Intermittent Claudication. M. Naide.—p. 1283.
Portable Diabetic Coma Treatment Stand. O. E. Turner.—p. 1285.
Diagnostic and Therapeutic Problems in Large Bowel Obstruction Due to Carcinoma of Colon. A. W. Ulin, P. J. Grotzinger, C. L. Sacks and W. L. Martin.—p. 1290.

Physiological Reviews, Baltimore

31:1-106 (Jan.) 1951

Physiology of Fertilization in Mammals. M. C. Chang and G. Pincus. —p. 1.
Secretory Function of Male Accessory Organs of Reproduction in Mammals. T. Mann and C. Lutwak-Mann.—p. 27.
Biological Mechanisms of Carboxylation and Decarboxylation. S. Ochoa. —p. 56.

Radiology, Syracuse, N. Y.

56:1-164 (Jan.) 1951

*Familial Fibrous Swelling of Jaws. J. Caffey and J. L. Williams.—p. 1.
Developments in Cerebral Angiography with Rapid Serialized X-Ray Exposures on Roll Film 9½ Inches Wide. W. G. Scott and W. B. Seaman.—p. 15.
Angiocardiographic Diagnosis of Mediastinal Tumors with Special Reference to Aortic Aneurysms. A. Celis, C. R. Pacheco and H. del Castillo. —p. 31.
*Thorium X Treatment of Skin Epithelioma, Keratoses, and Delayed Radiation Changes. J. J. Sher and W. E. Howes.—p. 39.
Irradiation Damage of Intestines Following 1,000-Kv. Roentgen Therapy. Evaluation of Tolerance Dose. H. I. Amory and I. B. Brick.—p. 49.
Symptomatic Hemangioma of Spine. H. J. Manning.—p. 58.
Inverted Position in Roentgenography. G. V. Butler.—p. 66.
Chorionepithelioma of Uterus: Resume of Literature and Presentation of Two Cases L. M. Levi and P. V. Haig.—p. 73.
Pharmaco-Cholangiography in Diagnosis of Odditis. J. M. Urrutia and P. Lavezzo.—p. 80.
Penumbra Effect in Therapy Cones. A. Raventos and G. S. Schwarz. —p. 84.
Studies of Radium in Human Bone. F. E. Hoecker and P. G. Roofe. —p. 89.
Use of Autoradiographs to Detect Defects in Radium Needles and Tubes and Inequalities in Distribution of Radium. J. H. Freed, E. P. Pendergrass and H. Raufer.—p. 99.
Gynograph, New Improved Gynoroentgenologic Apparatus for Use in Conjunction with Fluoroscopy and Radiography of Female Genital Tract. A. I. Weisman.—p. 104.
Uniform Contact Roentgen Therapy for Large Areas. Simple Device and Method. E. F. Lutterbeck and I. F. Hummon.—p. 108.
Simple Method for Direct Projection of Section of Roentgenogram onto Screen. A. R. Shands Jr. and F. P. Stone.—p. 112.

Familial Fibrous Swelling of Jaws.—The familial occurrence of painless enlargement of the jaws was first reported by Jones in 1933 in three siblings, 6, 5 and 4 years of age. Later, x-ray studies on the same family revealed that the condition was due to multiple dentigerous cysts involving the entire upper and lower jaws and accompanied by chronic enlargement of the lymph nodes in the submaxillary regions. The authors of the present report observed two families, some members of which exhibited clinical and roentgen signs similar to those in the cases described by Jones. The disorder is characterized by massive swelling of the cheeks and jaws beginning during the first three years of life. Dentition is defective. There are no associated symptoms or systemic manifestations unless the lower jaw becomes so large that it prevents closure of the mouth and interferes with respiration and speech. Roentgenograms shows extensive multilocular rarefaction and pronounced expansion of the mandible. The maxilla is also greatly expanded, but the rarefaction is diffuse rather than multilocular. No other bones are affected. Near puberty, the facial appearance improves, with a progressive decrease in the size of the jaws; by middle age the roentgen and facial abnormalities are minimal or absent. Tissue specimens from the jaws show fibrous tissue containing varying numbers of giant cells, and the histological picture was identical with that of fibrous dysplasia. Various diseases of the jaws have been called fibrous dysplasia, fibrous osteoma, osteofibroma and ossifying fibroma. Most of the recent writers agree that these diseases may be regarded as variants of fibrous dysplasia. The authors of the present report believe that in spite of the histological similarity of fibrous dysplasia and familial fibrous enlargement of the jaws these conditions should be regarded as separate entities.

Thorium X Treatment of Skin Lesions.—Thorium X is a radioactive element obtained by separation from its parent element, radiothorium. It has a half life of 3.64 days. It emits principally alpha particles ranging in energy from 5.5 to 8.8 mev. Sher and Howes stress that thorium X should not be confused with thorium or other thorium compounds. The thorium paste previously used by Bulkley did not contain thorium X but contained thorium oxide in combination with other chemicals. The action of this paste was mainly a caustic one, not dependent on its radioactive qualities. The authors applied thorium X directl to the lesion in alcoholic solution or ointment, containing 150 300 microcuries per cubic centimeter or gram. They revie the results obtained with this treatment in 51 cases of skin ep thelioma. Forty-six were of the basal cell variety, four we squamous carcinoma of the prickle cell type and one was the mixed basosquamous type. Uniformly satisfactory resul were obtained in 50 of 51 cases of skin epithelioma. A sing case, a deep rodent ulcer, did not respond. Keratoses were satisfactorily eradicated with but two or three applications the alcoholic solution. This agent is an efficient method of clea ing senile keratoses and destroying superficial epitheliomas, well as improving the cosmetic appearance following radiatic damage to skin and stimulating healing in radionecrosis. Appl cation of the material is simple. The solution is swabbed ov and the ointment is rubbed into the part. Transient erythem usually follows one or several applications. Pigmentation m follow the erythema, but no untoward sequelae have been e countered. No ugly scarring has been observed. On healing, t treated area becomes soft and pliable. Sensitive organs, as t eye, ear, nose, hair and even cartilage, have not been damage Hair follicles and sebaceous glands remain intact following r peated application of thorium X in solution.

Review of Gastroenterology, New York

18:1-78 (Jan.) 1951

Enteric Cysts of Stomach: Case Report. G. McNeer and L. J. Spi —p. 13.
Action of Drugs on Human Biliary Tract. J. M. McGowan and S. Sa kisian.—p. 19.
Diaphragmatic Hernia. W. E. Jones.—p. 31.
Infective Hepatitis. S. O. C. Pribram and R. Upham.—p. 37.
Discovery of Cause and Cure of Gastrointestinal Ulcers. J. S. Sm —p. 61.
Syphilis and Rectum. W. Lieberman.—p. 67.
Arthritis as Related to Gastroenterology. P. J. Warter and S. Horoscha —p. 70.

Rocky Mountain Medical Journal, Denver

48:73-152 (Feb.) 1951

Diaphragmatic Hernia. A. K. Atkinson and J. A. Layne.—p. 93.
Chronic Myocardial Failure: Ambulatory Management, Progress Repor J. G. Olson and F. W. Seager.—p. 97.
Current Status of Electron Microscope in Thin Tissue Studies. E. Geever, R. F. Dent Jr. and M. Barhite.—p. 99.
Clinical Evaluation of Isonorin in Bronchial Asthma. H I. Goldma —p. 102.
Comparative Inadequacy of Present Day Market Streptomycin in Tube culosis. H. J. Corper, M. L. Cohn and W. H. Frey.—p. 104.
Treatment of Fresh Accidental Wounds. M. Wood.—p. 108.

South Carolina Medical Assn. Journal, Florence

47:45-90 (Feb.) 1951

Physician Know Thyself. J. H. Means.—p. 45.
Cardiac Catheterization in Diagnosis of Congenital Heart Disease. J. Boone.—p. 50.
Behavior Disturbances in Children. J. H. Marshall.—p. 52.
Cardiac Evaluation in Combined Respiratory Vascular Disease. B. Miller.—p. 57.
Practical Method of Intra-Arterial Transfusion. K. M. Lippert and I. Furman.—p. 63.
Clinical Significance of Foreign Body Granulomas: Review. D. Symmer —p. 66.

Western J. Surg., Obst. & Gynecology, Portland, Ore

59:1-48 (Jan.) 1951

Single-Layer Open Intestinal Anastomosis Applicable to Small as We as Large Intestine. L. P. Gambee.—p. 1.
Trend Toward Complete Hysterectomy. I. F. Stein.—p. 6.
The Elderly Primigravida: Thirteen Year Review. R. J. Hawkins, W. Foley Jr. and T. M. Tierney.—p. 13.
Caudal Analgesia in Private Obstetric Practice: Review of 2,139 Case G. C. Downing.—p. 19.
Tuberculous Cholecystitis: Case Report. O. F. Grimes and R. L. O'Neal —p. 24.
Chronic Poisoning of Ovaries and Testes of Albino Rats and Mice b Nicotine and Cigarette Smoke. J. M. Essenberg, L. Fagan and A. Malerstein.—p. 27.
Spontaneous Hematoma of Rectus Abdominis Muscle Simulating Twiste Ovarian Cyst: Report of Three Cases. H. Broady.—p. 33.
Spontaneous Retroperitoneal Hemorrhage Complicating Pregnancy, wit Review of Literature. R. W. Kistner and S. T. Garber.—p. 35.
Gartner's Duct Cyst Complicating Pregnancy. M. Roland.—p. 41.

FOREIGN

Acta Clinica Belgica, Brussels

5:481-556 (Nov.-Dec.) 1950. **Partial Index**

*Evaluation of Effects of Streptomycin on Pulmonary Tuberculosis in Adults. H. Durieu, F. de Clercq, J. Kenis and others.—p. 487.
Rapid Determination of Gamma Globulin Concentration in Blood Serum by Zinc Sulfate Method. J. Demeulenaere and R. J. Wieme.—p. 512.

Streptomycin in Pulmonary Tuberculosis.—Streptomycin or dihydrostreptomycin was used in the treatment of 234 patients with pulmonary tuberculosis. The daily dose of the drug varied from 0.5 to 3 Gm., but most of the patients received one injection of 0.5 Gm. every 12 hours. Some patients were given 2 Gm. every third day, and this technique seemed to delay streptomycin resistance. The duration of treatment varied from 30 to 200 days, but the majority of the patients were treated for three months. Treatment was usually discontinued when the roentgenologic picture returned almost to normal or no longer showed any improvement. Although streptomycin exerted some effect on many forms of pulmonary tuberculosis, its efficacy varied considerably according to the roentgenologic and clinical picture. Five roentgenologic types of pulmonary tuberculosis were distinguished: the micronodular or miliary, the reticulonodular, the large nodular, the homogeneous and the ulcerative types. Complete clearing of the miliary lesions was observed in all patients with uniform micronodules, in 44 per cent of the patients with irregular micronodules and in 30 per cent of the patients with "cold miliary tuberculosis," i. e., patients with minimal clinical symptoms. Complete clearing of reticulonodular lesions occurred in 8 per cent of the cases. Large nodules cleared in 11 per cent, homogeneous infiltrates in 9 per cent and ulcerative lesions in 3 per cent of the patients having each of these types of lesion. In general, the acute cases responded better to streptomycin than the hronic cases. In the presence of cavities, the associated nonavitary lesions showed less improvement and complete clearing vas uncommon. Satisfactory results were obtained frequently in ronchial tuberculosis. Koch's bacillus disappeared in 10 per ent of the patients with cavities and in 50 per cent of those vithout cavities. Imperative, relative and questionable indications or treatment with streptomycin are listed. Streptomycin proved o be of much aid in collapse therapy by making this procedure afer in 20 of 117 patients with cavities and by making it posible in an additional 28 patients. Toxic reactions, such as disurbances of hearing and erythema, were observed less freuently in patients treated with dihydrostreptomycin than in hose treated with streptomycin, but they were still observed egularly with total doses of more than 100 Gm. of dihydrotreptomycin.

Acta Medica Orientalia, Jerusalem

9:237-266 (Oct.) 1950. **Partial Index**

Rupture of Retroperitoneal Part of Duodenum Following Trauma: Report of Four Cases. O. Aladjem.—p. 237.
Acute Cerebral Accidents in Diabetes. E. Lyon.—p. 246.
*Fatal Acute Boxing Injuries. E. Jokl.—p. 255.

Fatal Acute Boxing Injuries.—This report is concerned with two cases in which death resulted from severe damage to the brain in the absence of fractures. The first patient, a youth of 17, had received a powerful blow to the right temple. He collapsed shortly thereafter and then had an epileptic grand mal attack. This boy had not had epilepsy before. He was moribund when he was taken to a hospital. Five minutes after admission he was dead. Necropsy revealed the skull to be intact, but a subdural hemorrhage covered the greater part of the left cerebral hemisphere. The second patient, aged 20, had received four severe blows to the side of the head. He collapsed shortly after the boxing match and died on the seventh day. Throughout the sixth day involuntary twitching movements of the left hand were observed. Necropsy revealed a hemorrhage over the right hemisphere, and a fresh clot of blood was attached to the dura. The skull was intact. These cases prove that epileptiform symptoms may result from subdural hemorrhages, and the authors stress that in such instances surgical intervention is imperative, especially if the symptoms allow localization of the cerebral focus as in the second case under discussion.

Acta Vitaminologica, Milan

4:241-284 (Dec.) 1950. **Partial Index**

*Effect of Paraaminobenzoic Acid in Serum Sickness. G. Ricci.—p. 271.

Effect of Paraaminobenzoic Acid in Serum Sickness.—The author studied 39 infants and children with serum sickness following the administration of diphtheria antitoxin, either normal or purified, in treatment of pharyngeal, laryngeal or nasal diphtheria. The dose of antitoxin varied from 60,000 to 100,000 international units. The serum sickness occurred in seven to 10 days after administration of the serum in all cases but five. In these it occurred within the first three days. Thirty-four of the patients were treated with paraaminobenzoic acid, given either orally or intramuscularly. The dose varied with the age of the patient and the acuteness of the serum sickness. For one or two days a daily dose of 6 to 18 Gm. was given, after which the dose was reduced to between 3 and 9 Gm. This was continued for four days after disappearance of the clinical symptoms of the disease. The daily doses were divided into six equal parts administered at four-hour intervals. As a rule, the clinical symptoms of the disease abated immediately after start of the treatment, were controlled within the first day and showed no tendency to return after four days of sustained treatment. In the five patients with serum sickness who did not receive paraaminobenzoic acid, the symptoms were severer and of longer duration, requiring four to seven days for control.

Archivum Chirurgicum Neerlandicum, Arnhem

2:201-300 (No. 3) 1950. **Partial Index**

Early Diagnosis of Carcinoma of Lung. J. K. Kraan.—p. 201.
Pulmonary Carcinoma. L. D. Eerland.—p. 213.
Carcinoma of Prostate. H. C. E. M. Houtappel.—p. 246.
*Surgical Treatment of Bronchial Asthma. P. Nyst.—p. 261.
Tumors of Joint Capsule. W. F. Suermondt.—p. 278.

Surgical Treatment of Bronchial Asthma.—Bilateral resection of the posterior bronchial plexus was done for the first time in a human subject with bronchial asthma by Rienhoff and Gay in 1938. Nyst performed this operation in 11 patients with intractable bronchial asthma. In two of his 11 patients the resection was combined with bilateral extirpation of the sympathetic thoracic ganglions 2 to 5, and in two other patients these ganglions were extirpated on the left side only. There were no complications during or after the operations, and there was no mortality. The author says that it is difficult to explain why the mortality should have been so high with such an able thoracic surgeon as Rienhoff. The encouraging results in the author's own cases will, he hopes, persuade others not to overestimate the risks of this operation. The liberal use of antibiotics may possibly be helpful in preventing postoperative complications. The results depended neither on the duration of the disease nor on the age of the patient. Only one of the patients was free from asthmatic attacks three years after the operation, and she was also the only one who had ceased taking medicines. Five of the patients reported slight attacks, and five were still subject to asthmatic crises. Of the patients subjected to sympathectomy, the two whose thoracic ganglions had been extirpated on one side improved; one of the patients subjected to bilateral sympathectomy became worse, and the other showed slight improvement. In the majority of cases resection of the pulmonary plexus reduced the secretion of mucus. The author believes that surgical treatment of bronchial asthma is indicated when medical therapy has failed or when serious invalidism or even death threatens because of recurrences of status asthmaticus.

Arquivos de Clínica, Rio de Janeiro

11:225-274 (Nov.-Dec.) 1950. **Partial Index**

*The Heart in Myxedema: Report on Seven Cases with Radiologic and Electrocardiographic Observation During Thyroid Therapy. L. Capriglione, J. Schermann, P. Schlesinger and A. B. Benchimol.—p. 225.

The Heart in Myxedema.—The authors report seven cases of acquired myxedema with clinical, roentgenological and electrocardiographic evidence of cardiac involvement. The heart size was increased in six of the seven cases, probably because of in-

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An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

filtration of the myocardium with a mucoid fluid. There was no evidence of pericardial effusion, and none of the patients had congestive cardiac failure. Treatment with cardiotonic agents alone was ineffective in these cases, but the addition of thyroid therapy produced symptomatic improvement, a reduction of cardiac size and progressive improvement in the electrocardiogram. The T wave became wider in five cases, and an auriculoventricular block disappeared in one patient. In all patients there was an increase in the basal metabolic rate and a decrease in the serum cholesterol level. The electrocardiographic changes in myxedema are regarded as functional, since they largely disappear during treatment and reappear when it is stopped. There was no correlation between the intensity of the myxedema and the degree of roentgenologic and electrocardiographic changes in these patients.

Beiträge zur Klinik der Tuberkulose, Heidelberg

104:379-464 (Jan. 4) 1951. Partial Index

Pneumoperitoneum and Temporary Phrenic Nerve Paralysis: Experience with 250 Cases from IRO-Sanatorium in Gauting. E. Sedlaczek. —p. 379.
*Treatment of Pulmonary Tuberculosis with Streptomycin. E. Haefliger, G. Mark and E. Geisel-Wermter.—p. 388.
Experiments to Attenuate Tubercle Bacilli by Amithiozone. R. Hasche-Klünder and E. Kröger.—p. 405.

Streptomycin in Pulmonary Tuberculosis.—Streptomycin was administered to 156 patients with pulmonary tuberculosis, who were followed up for at least three months after treatment was terminated. Results showed that recent infiltrations, acute episodes in the course of chronic pulmonary tuberculosis and recent hematogenous and bronchogenous dissemination respond best to streptomycin. The drug may also prevent bronchogenous dissemination after severe hemoptysis and hematogenous dissemination in primary infections with a tendency to extension. It is seldom indicated in benign forms of tuberculosis. Recovery resulted from treatment with streptomycin alone in one fourth of the patients with cavitation. Regression of the cavity by transformation into a solid lesion was demonstrated on roentgenological examination. This transformation occurred after previous occlusion of the draining bronchus in several cases; it is suggested that bronchial occlusion may be obtained more easily with the use of streptomycin. Collapse therapy however is indispensable in spite of treatment with streptomycin in the majority of patients. Combined collapse and streptomycin therapy opens rich therapeutic possibilities for the sanatorium physician. Indications for pneumothorax, thoracoplasty and extrapleural pneumonolysis may be widened when streptomycin is used for preoperative and prophylactic treatment. The optimum average daily dose of streptomycin is 1 Gm. in two divided doses of 0.5 Gm. Streptomycin is not a substitute for sanatorium treatment and collapse therapy of pulmonary tuberculosis, but is a valuable adjunct to these methods of treatment.

British Journal of Experimental Pathology, London

31:577-690 (Oct.) 1950. Partial Index

Maintenance of Strains of Schistosoma Mansoni, S. Haematobium and S. Matthei in Laboratory in Egypt, with Special Reference to Use of Gerbils. M. A. Azim and S. G. Cowper.—p. 577.
Effect of Diet on Oestrogen Inactivation by Liver. P. Ferret.—p. 590.
*Use of Antibiotics in Treatment of Experimental Diphtheria Infections. L. F. Hewitt.—p. 597.
Studies on Role of Adrenal Cortex in Adenosine Triphosphate Shock. H. B. Stoner and H. N. Green.—p. 603.
Effect of Injection of Diphtheria Prophylactic into Apparently Normal Horses. M. Barr.—p. 615.
*Synergistic Action of Anterior and Posterior Pituitary Hormones and Their Possible Relation to Eclampsia. A. D. T. Govan and C. L. Mukherjee.—p. 626.

Antibiotics in Experimental Diphtheria Infections.—The action on Corynebacterium diphtheriae of aureomycin, chloramphenicol and dihydrostreptomycin sulfate, together with paraaminosalicyclic acid was tested in vitro, and the effect of these antibiotics, administered subcutaneously or orally, on C. diphtheriae infections in guinea pigs was also tested. Results showed that both orally and subcutaneously administered aureomycin have some protective effect against C. diphtheriae infections. No strain was observed to develop resistance to aureomycin, so that its use for
treatment of diphtheria carriers by oral administration would i
volve the minimum of medical supervision. Chloramphenic
resembled penicillin in that although it is inhibitory to C. dip
theriae in vitro it failed to protect guinea pigs against infectic
Dihydrostreptomycin protected guinea pigs against infecti
with virulent C. diphtheriae, and it may be of value for t
treatment of patients and carriers. Resistance to dihydrostrep
mycin developed fairly readily in the case of C. diphtheriae, a
resistant strains were resistant also to streptomycin. Such res
tance was not readily lost, and *resistant strains retained* th
toxigenicity unimpaired. Paraaminosalicylate had no effect
the development of resistance to the antibiotic or on its inhibit
effect. Although retaining their toxigenicity unimpaired after t
development of dihydrostreptomycin resistance, two gra
strains of C. diphtheriae lost their ability to ferment starch a
became indistinguishable from mitis strains. This lends supp
to the previously advanced hypothesis that mitis strains may
degraded gravis strains.

Synergistic Action of Pituitary Hormones.—Subcutaneous
jections of posterior pituitary solution (pituitrin®) in olive
subcutaneous injections of chorionic gonadotropin, intraven
injections of sheep anterior pituitary lobe extract and injecti
of urine from toxemic pregnant women with the addition of p
terior pituitary solution were given to rabbits. Administration
large doses of posterior pituitary extract resulted in focal necr
of the liver, but the lesions did not resemble those of eclamps
Anterior pituitary extract sensitized the animals to the action
posterior pituitary extract, and produced lesions in the li
and kidneys that bore some resemblance to those of eclamp
Chorionic gonadotropin did not sensitize the animals to
action of posterior pituitary extract. The urine of some sever
toxemic pregnant women sensitized the animals to poste
pituitary extract in a manner similar to that of anterior pituit
extract. It is suggested that toxemia of late pregnancy may
due to hyperactivity of the anterior pituitary lobe, which se
tizes the patient to slightly increased amounts of posterior p
itary secretion. It is also suggested that the gonadotropins in l
pregnancy are derived from the anterior lobe of the pituit
It appears from the experiments that the administration of p
terior pituitary extract to patients with a high level of gona
tropins in the blood is somewhat dangerous.

British Journal of Tuberculosis, London

45:1-40 (Jan.) 1951

Prognosis in Pulmonary Tuberculosis. J. Stephani.—p. 1.
Pulmonary Agenesis. F. S. W. Brimblecombe.—p. 7.
Minor Respiratory Infections: Importance of Their Diagnosis and Tr
ment. D. G. Wraith.—p. 15.
Conjugal Tuberculosis and Its Bearing on Etiology of Disease. W
Snell.—p. 22.
Changing Pattern of Pneumonia. A. L. Wingfield.—p. 27.

British Medical Journal, London

1:205-262 (Feb. 3) 1951

Reactions of Bacteria to Chemotherapeutic Agents. L. P. Garrod.—p.
*Diagnosis of Aortic Stenosis Based on Study of 25 Proved Ca
D. Lewes.—p. 211.
Subacute Bacterial Endocarditis Due to H. Para-Influenzae and
Viridans. J. G. Goudie and C. P. Lowther.—p. 217.
*Leg-Lengthening. F. G. Allan.—p. 218.
Bone-Shortening for Inequality of Leg Lengths A. L. Eyre-Bro
—p. 222.
Six Blood-Group Antibodies in Serum of Transfused Patient. R.
Waller and R. R. Race.—p. 225.

Diagnosis of Aortic Stenosis.—Among 2,245 routine necrops
performed at the Postgraduate Medical School of London duri
the seven year period ending February 1950, aortic stenosis w
found in 45 cases (1.8 per cent). Calcareous aortic stenosis w
the only significant valvular lesion in 25 of these 45 cases; in t
remaining 20 other lesions were found as well: 16 were co
plicated by mitral stenosis, three by gross aortic incompeten
and one by tricuspid stenosis and mitral stenosis. As it w
thought that the clinical problem of aortic stenosis could
studied satisfactorily only when uncomplicated by other valvul
lesions, detailed analysis was confined to the first group (
cases). *In three of the 25 cases death was due to noncardi*

causes and aortic stenosis was a coincidental necropsy finding. Twenty-two patients first came under medical observation on account of cardiac or cerebral symptoms; 15 died from heart failure consequent to the valvular lesion, and four died from bacterial endocarditis. A correct clinical diagnosis was made in a little over half the cases. On the basis of the classic signs of a slowly rising pulse, an aortic systolic murmur and thrill and an absent second sound, less than one-sixth of the cases would have been recognized clinically. Evidence is given to show that in considerably more than half the reported cases a correct diagnosis could have been made in life. A more careful evaluation of harsh aortic systolic murmurs and demonstration by fluoroscopy of grossly calcified aortic valves could have determined the diagnosis in some cases; a closer study of the course of the disease after the onset of symptoms should have directed attention to the valvular lesion in others.

Leg Lengthening.—Since shortening of the lower limb is a complication of many conditions, attempts have been made to correct this deformity by operative means. There are three possible operative methods of limb equalization: (1) limb lengthening, (2) limb shortening and (3) arrest of epiphysial growth. For a person who is going to grow tall, controlled epiphysial arrest seems to be the ideal procedure, but there will always be some in whom the chance of slowing growth in the longer limb will have been missed. There remains the choice of lengthening or shortening, and when the alternative is offered, lengthening is usually chosen, even though the comparative simplicity of shortening is stressed. The patient usually regards shortening as a mutilation. The following contraindications to leg lengthening are mentioned: (1) inadequate blood supply to the short limb, (2) shortening so great that amputation and the fitting of a prosthesis would be preferable, (3) active or recently active bone or joint disease, (4) age (only adolescent and young adult patients are suitable) and (5) poor control, though it is sometimes worth while to lengthen a completely flail limb. In discussing the operative technique, the author says that nearly all the difficulties and many of the risks enumerated are due to interference with the blood supply to the limb or to the separated bone fragments. This results almost entirely from the extensive soft-tissue dissection that is carried out by those who believe that the soft tissues will not stretch or will be permanently injured during stretching. This is not so, and all that is theoretically necessary is division of the bone and gradual separation of the fragments. Everything else will stretch, given sufficient time and a distracting force that is strong enough. The operation should therefore be confined to a Z-shaped or oblique osteotomy and to the application of the distracting apparatus. Distraction is started immediately and proceeds at the rate of about 1/16 inch (1.6 mm.) a day. It is regulated largely by the patient's reactions. The author lists the diagnoses in 101 cases in which leg lengthening operations were performed. In 54, tibial lengthening was done and in 47 femoral lengthening. Gains in length in both tibia and femur up to 2 inches (50.8 mm.) are possible without complications. Beyond that, transient complications occur and must be weighed against the desire to gain more length.

Deutsche medizinische Wochenschrift, Stuttgart

76:1-46 (Jan. 5) 1951. **Partial Index**

Tetany and the Gonads. P. Stucki.—p. 7.
Cushing Disease and Psychic Disturbances. W. F. Haberlandt.—p. 11.
Biologic Differentiation of Proteins in Aged Blood and Protein Material. P. Uhlenhuth.—p. 14.
Electron-Optical (Ultramicroscopic) Studies on Influenza Virus and the Agglutination-Lysis Phenomenon on the Erythrocyte Membrane. W. Bolt, O. Küchenhoff and T. Vogel.—p. 17.
*Clinical Experiences with Chloromycetin in Treatment of Serious Nutritional Disturbances. K. Weisse.—p. 18.

Chloramphenicol in Nutritional Disturbances.—Nutritional disturbances in infants were treated almost exclusively with dietetic measures until the sulfonamides and antibiotics became available. This paper presents observations on the use of chloramphenicol (chloromycetin®) in infants with severe dyspepsia. The first case discussed concerned a prematurely born infant (birth weight, 1,250 Gm.) who lost weight and on the ninth day of life weighed only 900 Gm. The infant was fed milk from a breast milk collection station, but alimentary dyspepsia developed, the stools containing gram negative as well as gram positive organisms. When the infant was almost moribund, treatment with chloramphenicol was begun (150 mg. given over a period of 48 hours). With this treatment the infant improved rapidly and the pathogenic flora disappeared from the stools. In two other prematurely born infants and in four young infants up to 9 months of age who exhibited dyspeptic disorders, treatment with chloramphenicol produced equally favorable results. In some of these infants the dyspepsia was of alimentary origin; in others it developed after attacks of influenza or severe jaundice. Signs of severe toxicity, such as stupor and Kussmaul's reaction (air hunger), subsided in from eight to 30 hours. The dyspeptic manifestations—lack of appetite, vomiting, diarrhea and loss of weight—rapidly disappeared as did the pathogenic organisms. The therapeutic effect of chloramphenicol on dyspeptic disorders was definitely superior to that of sulfonamides and of streptomycin.

Geburtshilfe und Frauenheilkunde, Stuttgart

11:1-96 (Jan.) 1951. **Partial Index**

*More Extensive Use of Cesarean Section. E. Anderes.—p. 1.
Diagnosis and Therapy of Thrombosis and Embolism. T. Koller.—p. 13.
Treatment of Febrile Abortion. R. Stevens.—p. 38.
Significance of Diphtheria Bacilli in Gynecology. H. Hartl.—p. 43.
*Superfetation and Defective Ova in Multiple Pregnancies: Report of Case and Survey of Literature. K. Salfelder and H. J. Lambertz.—p. 50.

Cesarean Section.—Although the improvement in the technique of the cesarean operation justifies its more extensive use, it should be performed only on the basis of strict indications. During the last four weeks preceding delivery, and particularly during delivery, the parturient woman should be examined only by way of the rectum. Vaginal examinations greatly increase the possibility of infection and are particularly dangerous if a cesarean operation is required subsequently. The use of high forceps should be rejected, because they cause serious injury to the soft tissues; furthermore, stillbirth or neonatal death often occurs after their use, as a result of intracranial hemorrhage. Cesarean operation, performed at the correct time as determined by repeated examination of the white blood cell picture, can usually circumvent the need for a high forceps operation, and the results are much better for both mother and child. When there is an increase in band cells, a choice must be made between abdominal and vaginal intervention. The longer cesarean operation is postponed beyond this point the more unfavorable the prognosis. If the operation is done at the right time and in properly selected patients and if adequate attention is given to contraindications, maternal mortality will not exceed 1 per cent.

Superfetation or Defective Ova.—A case of abortion of twins is reported in which there existed a great difference in the size of the fetuses, one being 14 cm., the other 9 mm., in length. Histological studies revealed that the placentas had been present for the same length of time and therefore that the two fetuses were also of the same age. The authors believe that the second, smaller fetus had developed from a defective ovum in a twin pregnancy. They cite factors to support this contention and then review the most important cases of supposed superfetation reported in the literature. They cite factors suggesting that in many of these cases also the supposed product of superfetation was in reality an underdeveloped embryo or fetus. They show that the good preservation of the smaller fetus or the apparent chronologic differences in the placentas cannot be taken as proof of superfetation. They feel that superfetation can be regarded as established only by the birth of infants differing in race and age, deriving from different periods of ovulation and from fathers of different races.

Giornale di Clinica Medica, Parma.

31:1345-1446 (Nov.) 1950. **Partial Index**

*Liver Function in Bright's Disease According to Various Recent Tests of Liver Function. D. Bastagli and A. Lodi.—p. 1345.
Myocardial Infarct in Ambulatory Patients: A Study of 168 Cases. M. Rosselli and G. Micheli-Pellegrini.—p. 1375.
Activity of Tissues in Determining Besnier-Boeck-Schaumann's Disease. G. Romualdi and A. Torrini.—p. 1386.

Liver Function in Bright's Disease.—The authors performed liver function tests in 35 patients with kidney disorders, including 29 patients with Bright's disease and six patients with acute renal diseases of other kind. In patients with chronic Bright's disease, the tests of liver function were made before the occurrence of uremia. The tests performed were the Takata, Ucko, MacLagan, Hanger and the measurement of the values of cholinesterase in the blood serum. Four of the patients with Bright's disease had a history of previous liver disease. None of the patients showed clinical symptoms of liver dysfunction, except when uremia occurred. The laboratory tests, however, revealed functional liver changes in 18 out of 29 patients with Bright's disease and in all the six patients with acute renal diseases other than Bright's disease. There is no definite syndrome of liver insufficiency in renal diseases of any of the aforementioned types, but the functions of the liver are involved early in the course of renal diseases in most cases. Evidence that the liver is affected by the causal agent of the renal disease during the actual attack is given by the results of the tests, which showed liver dysfunction more frequently in the acute and subacute periods of the disease than in the chronic period, and which were positive in all cases of secondary acute renal diseases other than Bright's disease. In the chronic stage of Bright's disease, there is compensation of liver function, unless uremia appears.

Indian Medical Gazette, Calcutta

85:437-456 (Oct.) 1950

Acute Gastro-Enteritis Due to T. Vincenti and B. Fusiformis. L. M. Sanghvi and P. Subrahamanyan.—p. 437.
Two Instances of Proved Rabies in Tiger. S. R. Pandit.—p. 441.
*Outbreak of Plague in Epidemic Form Treated with Streptomycin and Sulfadiazine. P. K. Ghosh.—p. 441.
Insulin Resistance in Diabetes Patients. J. P. Bose.—p. 445.
Hydrophobia in India. M. L. Ahuja and A. G. Brooks.—p. 449.
Serological Technique: Immunotherapy (contd.). Immunization Against Rabies. S. D. S. Greval.—p. 453.

Streptomycin and Sulfadiazine in Treatment of Plague.—An epidemic form of plague that broke out in Babhnan and the vicinity in 1949 is described by Ghosh. The disease started in the local market in late summer and remained localized and sporadic until the end of the year. Prophylactic inoculations were given to the residents of the locality during the quiescent stage of the disease, i. e., from August to November. However, in spite of the inoculations, the disease had reached epidemic proportions toward the end of November. It was predominantly of a bubonic variety at first, but other types appeared later on. Contrary to the usual involvement of the inguinal group of lymph glands, buboes appeared in significant numbers in the upper part of the body. The 155 reported cases were treated with injections of dihydrostreptomycin hydrochloride or sulfate or streptomycin calcium chloride complex and tablets of sulfadiazine or sulfatriad (37.5 per cent sulfadiazine, 37.5 per cent sulfathiazole and 25 per cent sulfamerazine). No patient required more than two injections (i. e., 1 Gm.) of streptomycin for defervescence and alleviation of symptoms. A few patients were cured after a single injection. There were no signs of vestibular or auditory neurotoxicity, renal, allergic or any other reactions in this series and no untoward effect on pregnancy. Other drugs used in treatment included nicotinic acid (pelonin®), digitalis, bromides, stimulants, analgesics, brandy and, in certain cases, a 25 per cent solution of nikethamide (coramine®). The diet was restricted to milk, fruit juices and copious dextrose solution. Six of the 155 patients died. Five of these six presented the picture of severe cardiac involvement. The remainder recovered and did not experience any debilitating after effects. The author summarized his observations as follows: 1. There was a steady rise in the number of plague cases up to April, and there was a sharp decline in May, when temperatures were very high (112 F. in the shade). 2. Females showed a higher percentage of complications than did males. 3. There was a higher morbidity and mortality rate among persons not inoculated than in inoculated persons. 4. Patients in the age group of 5 to 15 years showed the highest mortality. 5. The duration of treatment had no effect on mortality. 6. The duration of the illness before treatment was started had almost no effect on mortality. 7. The number of cases occurring in a family did not influence mortality.

J. Neurol., Neurosurg. & Psychiat., London

13:243-326 (Nov.) 1950

*Infantile Hemiplegia Treated by Removing One Cerebral Hemisphere. R. A. Krynauw.—p. 243.
Symposium on Results of Operations on Acoustic Neuromas. G Horrax, H. Olivecrona, J. B. Pennybacker and others.—p. 268.
Postoperative Intracranial Hypotension. J. Chrobski.—p. 280.
Electrical Activity of Human Brain During Artificial Sleep: I. Cyclical Pattern of Response to Barbiturate Sedation. B. D. Wyke.—p. 288.
Observations on Diaphragmatic Movement in Some Neurological Disorders. P. K. Robinson, W. H. Mosberg Jr. and R. C. W. Lowe.—p. 296.
Familial Ataxia, Deaf-Mutism, and Muscular Wasting. W. B Matthews.—p. 307.
Nailbed Capillaries in Disseminated Sclerosis. J. H. D. Millar and D. G. F. Harriman.—p. 312.
Memory Studies in Electric Convulsion Therapy: II. Persistence of Verbal Response Patterns. M. Williams.—p. 314.

Removal of One Cerebral Hemisphere for Infantile Hemiplegia.—Krynauw reports on a new approach to the treatment of the infantile hemiplegias, namely, hemispherectomy. The histories are given of 12 patients between the ages of 8 months and 2 years who were subjected to this operation. Convulsive and mental changes rather than the hemiplegic manifestations were considered the chief indication for the operation. The author has come to consider mental deviations in the absence of epileptic phenomena and epileptic manifestations in the absence of definite mental or behavior disturbances as adequate indications for surgery. One of the 12 patients, a boy aged 2 years 3 months, died shortly after the operation. Ventriculograms are important in the determination of suitability for operation. If they show gross unilateral distortion, hemispherectomy is indicated. A generous lateral osteoplastic flap affords the room required for hemispherectomy. The hemisphere is divided into four segments by a vertical and transverse incision of the superolateral surface extending into the ventricle. Each quadrant is dissected out, working from within the ventricle. The whole of the cerebral cortex, with the exception of that portion medial to the tail of the caudate nucleus, is removed, together with the putamen and globus pallidus. A burr hole is made in the center of the bone flap for postoperative aspirations. One of the 12 patients, a boy aged 27 months, died shortly after the operation. In the others the epileptic manifestations ceased after operation without sedative medication and improvement in mentality exceeded the best expectations. Improvement in the mental sphere is dependent on the integrity of the remaining hemisphere and its ability to function normally, once it has been released from abnormal influences from the pathological hemisphere. Although return of function and power to the preoperative level was expected, improved tone and function beyond this level has been a happy by-product of the operation. Spasticity and clumsiness were lessened. Great improvement in personality, behavior and mentality was noted in all cases.

J. Obst. & Gynec. British Empire, Manchester

57:873-1050 (Dec.) 1950. **Partial Index**

Extra-Ovarian Brenner Tumour. T. G. Robinson.—p. 890.
Traumatic Intra-Uterine Adhesions. J. G. Asherman.—p. 892.
Maternal States in Relation to Congenital Malformations. C. O. Carter.—p. 897.
Vaginal Hysterectomy. F. J. Burke.—p. 912.
Combined Renal and Anterior Pituitary Necrosis. I. MacGillivray.—p. 924.
Management of Syphilitic Mother in Pregnancy. S. H. Riterband.—p. 931.
Primary Carcinoma of Fallopian Tube: Report of Case Superimposed on Tuberculous Salpingitis. L. A. Cruttenden and C. W. Taylor.—p. 937.
*Blood-Pressure and Prognosis in Toxaemia of Pregnancy. C. L. Mukherjee and A. D. T. Govan.—p. 941.
Case of Abdominal Pregnancy. P. Steptoe.—p. 949.
Rupture of Lower Uterine Segment During Normal Labour in Multigravidae. P. Simons.—p. 953.
Haemodynamic Changes in Kidney After Toxaemia of Late Pregnancy. R. A. Kenney, R. F. Lawrence and D. H. Miller.—p. 960.
Gangrene and Sequestrectomy of Uterus Following Lower Segment Caesarean Section for Obstructed Labour: with Review of Literature. W. R. Welply and P. Y. Chen.—p. 964
Non-Pulmonary Tuberculosis and Pregnancy. G. B. Gibson.—p. 969.

Blood Pressure in Toxemia of Pregnancy.—An analysis was made of the systolic and diastolic pressures in 936 patients with hypertension in pregnancy in relation to their clinical condition and the course of the disease. The results indicate that the hypertension of toxemia is predominantly diastolic. The hypertension remains balanced during pregnancy in cases of essential hypertension unless the pregnancy is further complicated by toxemia. The systolic-diastolic ratio in essential hypertension remains at 1.7 or more. In toxemia the hypertension is unbalanced and the ratio falls below 1.7. This provides an additional means of differentiating cases of essential hypertension from those of toxemia and also indicates when toxemia has been superadded to simple hypertension. As the ratio falls, toxemia manifestations become severer, and complications such as eclampsia tend to occur if the ratio drops below 1.5. A rapid fall in the ratio over a period of hours occurs before the onset of retroplacental hemorrhage.

Journal of Tropical Medicine and Hygiene, London

53:233-256 (Dec.) 1950

Clinical Investigations on Chemotherapeutic Treatment of Urinary Bilharziasis. Part I: Intravenous Trivalent Sodium Antimony Gluconate. J. M. Watson and G. Pringle.—p. 233.
*Ghoul Hand. D. B. Jelliffe.—p. 238.
Undulant Fever in Sudan: Successful Treatment of One Case with Chloramphenicol. M. A. Haseeb.—p. 241.

Ghoul Hand.—Jelliffe applies the term ghoul hand to a condition in which the skin of the palm is depigmented and of a corpselike, dead-white or tallow yellow color. This may be confined to the palms, but more often extends irregularly on to the dorsum. On this colorless skin are scattered blotchy areas of brownish hyperpigmentation that stand out prominently against the pale background like splashes of paint on a white surface. It is this mottled "dog's belly" appearance that is the most characteristic feature of the condition. The palmar skin is thickened, dry, inelastic, taut and slightly translucent. The surface is frequently smooth and glossy but may be scaly and cracked. The mobility of the hand is reduced, the thickened skin acting as a constricting armor. The palm is often curved in. Contractures, especially of the little and ring fingers, are common; the digits being bound in semiflexion by the fibrous, thickened and contracted palmar skin. Ghoul hand is usually symptomless and of slow, insidious onset. The author observed this condition frequently in an outpatient department in Nigeria and made clinical investigations on 20 patients with this disorder, giving particular attention to its possible association with yaws. He admits that it is difficult to prove beyond doubt that the cases of ghoul hand reported here are due to tertiary yaws alone, although the investigations seem to indicate that this is probable. If ghoul hand is due to tertiary yaws, the similarity of the condition to the lesions of chronic pinta, which is frequent in South America, is of interest.

Medical Journal of Australia, Sydney

2:917-948 (Dec. 23) 1950. **Partial Index**

Effects of Sodium Citrate in Lead Poisoning and Lead Absorption: Lead Absorption. D. O. Shiels, W. C. Thomas and G. R. Palmer.—p. 922.
*Bronchial Carcinoma. C. Harvey.—p. 928
Chemotherapy in Pulmonary Tuberculosis R. M. Ford.—p. 929.
Barbiturates in Spinal Anaesthesia. F. H. Shaw and K. H. Shankly.—p. 932.
Swelling on Either Side of Wrist. N. Little.—p. 934.

Bronchial Carcinoma.—Between 6 and 8 per cent of all carcinoma is bronchogenic. Earlier recognition of bronchial carcinoma is important, because now in most cases surgery is no longer of value when a diagnosis is made. The public must be educated to consult the physician when a cough persists for more than a month, and general practitioners must be urged to have a chest x-ray picture taken of any patient with symptoms that could be related to the respiratory system. In the great majority of cases, bronchial carcinoma is first detected by a radiological abnormality. The lesion may be indeterminate or masked, but the radiologist should make known any suspicious findings. He can probably make definite statements in only about 50 per cent of cases and perhaps suggest the diagnosis in another third. Of the remainder, he will probably miss 10 per cent entirely, in some cases because of pleural effusion. The author feels that physicians are not sufficiently conscious of the possibility of carcinoma in cases of respiratory disease. He objects to the common radiological diagnosis of "unresolved pneumonia," pointing out that in young persons it is most often due to tuberculosis or bronchiectasis, while in older persons the commonest cause is bronchial carcinoma. The search for malignant cells in the sputum or the secretions obtained through the bronchoscope might make the need for a diagnostic thoracotomy less frequent, but the author feels that in experienced hands exploratory thoracotomy carries little more risk than an exploratory laparotomy. Investigation must not be too prolonged. Four weeks should be an adequate study period in most cases. At the end of this time, if the diagnosis of carcinoma has not been ruled out and if the patient is a fair operative "risk," then thoracotomy should be performed, with the patient and staff prepared for pneumonectomy.

Medizinische Klinik, Munich

46:33-64 (Jan. 12) 1951. **Partial Index**

Antihistamine Preparations in the Prophylaxis of Focal and General Reactions During Removal of Focus of Infection. K. Fellinger.—p. 33.
Clinical Experiences with Pituitary Adrenocorticotropic Hormone (ACTH) in Chronic Polyarthritis. W. Kothé.—p. 35.
Articular Rheumatism Resulting from Disturbance in Sympathetic Regulation. W. Braeucker.—p. 41.
*Pyelographic Methods of Examination in Genitourinary Tuberculosis: Evaluation and Sequence of Use. H. Dettmar.—p. 47.

Pyelographic Methods in Urologic Examination.—There has been much discussion of the comparative values of excretory and retrograde urography in cases of urinary tuberculosis. Many are of the opinion that retrograde or ascending urography is indispensable for an exact diagnosis. Dettmar evaluates these two methods and shows that bilateral retrograde pyelography should not be used routinely, since it is often unnecessary and may be harmful. Careful clinical examination and excretory pyelography usually clarify the diagnosis. Only when these aids are inadequate should retrograde pyelography be done. Correct interpretation of the excretory urogram requires much experience. Decisions regarding the removal of the tuberculous kidney should be made only by those with experience in reading excretory urograms and in the other methods of urologic diagnosis. It is often said that retrograde pyelography is harmless. However, urinary passages are so sensitive in the presence of a tuberculous infection that instrumental manipulation involves significant danger. There have been reports of serious damage, such as repeated attacks of pyelonephritis. Death has even been known to result from bilateral retrograde pyelography. When pyelography is done on one side, there is often an increase in temperature, which generally subsides, but which may continue and necessitate nephrectomy.

Praxis, Bern

40:65-86 (Jan. 25) 1951. **Partial Index**

Serum Protein Picture. G. Riva.—p. 65.
*New Observations of Disease Due to Cat Scratches. F. Thélin and R. Martin-du-Pan.—p. 74.

Disease Due to Cat Scratches.—A new clinical entity known as "cat scratch disease" is described. This is a form of subacute regional lymphadenitis occurring in persons who have been scratched by cats. It is usually unaccompanied by signs of general illness except for an elevated sedimentation rate. The leukocyte count is normal, there is usually no fever and the patient frequently does not react to tuberculin. In all cases, however, the patient demonstrates a tuberculin type of cutaneous reaction to a presumably specific antigen obtained from involved lymph nodes. The pus aspirated from such nodes is always bacteriologically sterile. The adenopathy may involve only a single node, frequently the epitrochlear, or a chain of nodes, such as the axillary and supraclavicular. Occasionally the inguinal or submaxillary nodes are affected. The authors report seven cases of this disease in Swiss children. Three pairs of siblings in the group had recently played with cats. Four of the children had been scratched repeatedly by them. No cat could be traced in the environment of the seventh child. All children reacted positively to the stock antigen. The course of the adenitis was benign in all patients, and recovery occurred within several weeks to several months, occasionally after suppuration and spontaneous drainage. Treatment with aureomycin (25 mg. per kilogram of body weight daily for five days) seemed to hasten recovery in one patient. Penicillin was of no benefit. The cats that scratched the patients were not sick and did not react to the "specific" antigen. It was concluded that they simply transmitted the pathogenic agent mechanically.

BOOK REVIEWS

Public Health Engineering: A Textbook of the Principles of Environmental Sanitation. By Earle B. Phelps, Professor of Sanitary Science, University of Florida, and collaborating authors. Volume II, Part Three: The Food Contact. In collaboration with Walter D. Tiedeman, Chief of Milk and Restaurant Sanitation Section, New York State Department of Health, Albany. Cloth. $4. Pp. 213, with 35 illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1950.

This volume of a textbook unique in its field comes in language form pleasant to read and free from the eccentricities of word or meaning often found among advanced specialists in environmental sanitation. Both the senior author and his collaborator are nationally known among medical and lay health officers, whether in local, state or federal service, for their long and distinguished careers in research, health administration and professional education.

The purpose of this volume is to present in a form useful not only to the sanitary or public health engineer, but also to the physician, health officer, the field sanitarian, the public health nurse, the health educator, laboratory director, veterinarian, vital statistician and commercial processor and distributor of foods, the biological, mechanical and administrative principles on which the protection of the consuming public is based and the practical enforcement of these through sanitary codes and rules and regulations of local and state health departments and boards with respect to foods, particularly milk and its products and shellfish.

While air and water as two of the three major contacts of man in the environmental sense are dealt with in the first volume, this part concentrates attention on the relation of food to disease and food control policies in the first 39 pages. Milk and its production and processing technologies take another 75 pages. Shellfish production and control are described with masterly thoroughness, simplicity and brevity in 16 pages. Public eating and drinking places take another 36 pages, and the handling and disposal of garbage, refuse and municipal wastes, together with rodent and other vermin control, are sufficiently described in 15 pages leaving three pages for an index that meets the reader's convenience. Illustrations are well chosen and well executed. References while not numerous are easily followed as footnotes and are basic and up-to-date.

Accuracy of statement is so characteristic of both authors in their considerable contributions over 20 to 50 years of research and official and professional writings that it is no surprise to find this quality coupled with simplicity of expression and brevity throughout the volume.

There is no other work dealing so adequately with major problems of environmental sanitation and so exactly appropriate to the needs of students and practitioners of public health. There are no more valued participants in the health department team than the public health or sanitary engineer and his field staff of trained sanitarians. This book will be welcomed in schools of medicine, as in schools of public health. The authors are to be warmly congratulated on their success in guiding sanitary practice on the basis of biology as one of the disciplines of public health engineering.

Biochemistry of Glucuronic Acid. By Neal E. Artz, Ph.D., and Elizabeth M. Osman, Ph.D. Cloth. $2.50. Pp. 103. Academic Press, Inc., 125 E. 23rd St., New York 10, 1950.

This is a review of literature pertaining to the metabolic role of glucuronic acid. The senior author, formerly associate professor of biochemistry at Syracuse University, has been concerned with the subject for some time. The stated purpose of the authors is to bring presently available information together as a service and possibly as a stimulus to those who, in view of the fact that glucuronic acid is obtainable for the first time in sufficient amounts to permit exhaustive study, may wish to undertake investigation in this field.

Methods that have been employed for quantitative detem
nation of glucuronic acid are described and discussed, and
appears that no completely satisfactory procedure has yet be
developed. The compound is not found in the free state, b
has been identified as a constituent of complexes such
heparin, hyaluronic acid, chondroitin and mucoitin sulfuric aci
and of a number of immunopolysaccharides. It is also pr
ent as a conjugate in normal blood and urine. The amou
excreted increases significantly following administration of
variety of drugs. Studies aimed at disclosing the cite of orig
and nature of the percursors of glucuronic acid are describe
but results are somewhat contradictory. The compound app
ently can be synthesized in the animal organism, but how g
curonic acid is metabolized after administration and wheth
such a condition as a glucuronic acid deficiency can exist ha
not been established. The function and significance of be
glucuronidase, which occurs rather widely in animal tissues,
receiving increasing attention and is still to be established.

That endogenous glucuronic acid plays a role as a detoxica
has been accepted by many. The chapter on detoxication co
prises a large portion of this work. Types of compounds th
have been shown to undergo conjugation with glucuronic ac
during metabolism are listed and illustrated by formulas.
little has actually been established concerning the real sign
cance of this carbohydrate oxidation product, in spite of
rather voluminous literature bearing directly or indirectly
its metabolism, that it seems apparent that further investigati
should prove fruitful.

Essays in Surgery Presented to Dr. W. E. Gallie on the Occasion His Retirement from the Chair of Surgery in the University of Toror Cloth. $9.50. Pp. 584, with illustrations. University of Toronto Pr Toronto 5, Ontario, Canada; Oxford University Press, Amen House, W wick Sq., London, E.C.4, 1950.

The essays in this volume were compiled as a tribute to
William Edward Gallie. These contributions are the result,
part at least, of his precepts, examples and teachings. For
three essays dealing with numerous surgical subjects are p
sented. The diversification of the subject matter stresses the f
that, although Dr. Gallie's chief interest was in the field of bo
and joint surgery, he emphatically avoided overspecializati

The first essay pertaining to heparin sodium in blood clotti
and thrombosis is well written despite its brevity. A particu
note of interest in this essay is that it illustrates the productiv
that can result from interdepartmental research, in this case
departments of physiology and surgery. The essay entitled "
Gallie Operation for Recurrent Dislocation of the Shoulder"
been nicely presented by H. M. Coleman. An interesting a
enlightening contribution was written by W. G. Carscadd
dealing with the preservation of digits by immediate skin gra
ing. The photography in this essay illustrates many of the po
well. The quality of the illustrations on pages 96 and 104, wh
appear under the subject of end-bearing amputations, could ha
been improved on.

One of the outstanding chapters in this volume is the oft
neglected subject of pterygium colli. It is written by A.
Farmer, who presents four interesting cases and is of the opi
that the best surgical procedure for correction of this defe
a large "Z" flap type of operation. An interesting study is to
found in the subject, age incidence of rupture of the su
spinatus tendon, by Grant. A summary is made of the re
of 94 dissecting room subjects. Dr. James E. Bateman's e
on "The Operative Management of Peripheral Nerve Inj
stresses the fact that early closure of wounds and chemothe
have made possible more extensive reconstructions and impr
ments in nerve surgery. He states that "no nerve injury may
be singled out as having a hopeless prognosis." Dr. H. Woo
contribution on surgical procedure in the upper and lower j
in malignant disease sounds an encouraging note in the fact
removal of a part or the whole of the upper or lower j
feasible and that the deformity which results may be red

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

to a minimum with dental prostheses. One of the outstanding essays in this book is on "Diaphragmatic Hernia in Children" by S. A. Thomson. The clear, concise and authoritative writing of Dr. W. Boyd is again illustrated in his presentation of the subject of the spread of tumors. He stresses the point that a malignant tumor may spread by seven different routes, namely, tissue spaces, lymphatics, blood vessels, natural passages, transcoelomic, intraepithelial and innoculation.

The aforementioned are only a few of the subjects presented in this volume. The topics of bone surgery, chemotherapy, pancreatitis, craniocerebral war wounds, renal tuberculosis, duodenal ulcer and many others contribute to make a well rounded work. This tome can be recommended highly to anyone interested in an authoritative current review of modern surgical trends. It is indeed a fitting tribute to a man of Dr. Gallie's stature.

James Lind: Founder of Nautical Medicine. By Louis H. Roddis, Captain, Medical Corps, U. S. Navy. Cloth. $3. Pp. 177, with 8 illustrations. Henry Schuman, Inc., Publishers, 20 E. 70th St., New York 21, 1950.

This excellent biography of James Lind succeeds notably in associating the man and his works with the times and conditions in which he lived. The emphasis of the volume is on what Lind accomplished, his scientific demonstration of the prevention and cure for scurvy and his postulation of the fundamental principles of naval hygiene, rather than on his personal life about which little is known. Particularly satisfying is the integration of the subject with the broad panorama of nautical history and with the influence of scurvy, typhus, smallpox and other dreaded plagues at sea on the general history of civilization. The reader may be completely a landlubber and yet understand and appreciate this captivating biography.

The volume demonstrates clearly that there is no better way to gain an appreciation of medicine than through the study of its history. Its author paints an appalling picture of naval conditions prior to the mid nineteenth century, in the days when ships and fleets were depleted of their manpower by scurvy and contagious diseases. It is astonishing to realize that naval history and consequently world history were determined largely by the ability or inability of navies to bring men into action at crucial times according to the length of the sick list at the moment.

Captain Roddis makes no attempt to idolize James Lind. There is no need for that: the facts speak for themselves. The "line of battle" is sufficiently stirring without a Horatio Hornblower. James Lind makes the physician of fiction appear distinctly anemic, at best.

This book is pleasing in format and is suitably illustrated with well chosen and clearly reproduced illustrations. There are a bibliography of James Lind, sources of information on his life and works and on the general background of naval history and naval medicine and a chronology of events in his life in relation to events in the general, naval and medical history of the eighteenth century. There is also a satisfactory index. The book is highly recommended to all medical readers, from the student to the octogenerian.

"Your Prostate Gland": Letters from a Surgeon to His Father. By Reed M. Nesbit, M.D., Professor of Surgery, University of Michigan Medical School, Ann Arbor, Michigan. Cloth. $2. Pp. 50, with illustrations by Janet McLaughlin. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; The Ryerson Press, 299 Queen St., W., Toronto 2B, 1950.

This book consists of a series of letters written by a prominent urologist to his father, who was suffering from prostatic obstruction. The book reminds one of a somewhat similar series of letters written by a self-made businessman to his son. There are seven letters, and they present in simple language the subject of prostatic obstruction, including cancer. They follow the usual textbook order of anatomy, physiology, etiology, symptoms, diagnosis and treatment. One letter is devoted to transurethral resections, and another to cancer of the prostate. The material is clearly presented and gives a fine picture of the present day status of the treatment of cancer of the prostate. This book will answer many questions that might arise in the mind of the patient with prostatic obstruction.

Surgeons Twoe and a Barber: Being Some Account of the Life and Work of the Indian Medical Service (1600-1947). Compiled and furnished with introductory essay by Donald McDonald. With foreword by Lieut.-General Sir Bennett Hance, K.C.I.E., O.B.E., K.H.S. Cloth. 42s. Pp. 295, with illustrations. William Heinemann, Ltd., 99 Great Russell St., London, W.C.1, 1950.

India is a country that is fascinating to many, and this book helps explain some of the reasons for its fascination, particularly for those who have had an opportunity to become closely affiliated with the medical services and opportunities that exist there. The book is not a history of the Indian Medical Service, which was prepared earlier by another author. It is, however, an assignment undertaken by the author to bring up to date the role of the Indian Medical Service. The tenor of this book and the objective of the author probably are best reflected in some of the words from the foreword:

> India has come of age; and the claims of the health services, insistently pressed by the Indian Medical Service, are at last receiving the attention from the public and from official sources that is their due. An increasingly numerous and capable independent medical profession, the vast majority of whom have been trained by the officers of the Service, has come into existence and is able, ready and eager to assume its due place in the care of the health of its own people—a fact which, despite the denials of interested parties, fills the service with legitimate pride. The need for efficient health service, and for the medical and ancillary staff to provide them, is clamant; and its satisfaction alone will fully absorb the output of all training institutions—existing and to be provided—for many years to come.

If the Indian Medical Service should cease to exist as it has been known, those who have been associated with it can be sure that the service, as stated by Sir Bennett Hance in the foreword, "its ethics, its traditions and its achievements will live on as the inspiration of its successors and the yardstick by which their performance will be changed." The reader will find a fascinating portrayal of the discovery of the Indies, the beginnings of activities in the seventeenth century, the growth that occurred during the eighteenth and nineteenth centuries and the changes that took place in the twentieth.

Paul Ehrlich. By Martha Marquardt. With introduction by Sir Henry Dale. Cloth. $3.50. Pp. 255, with illustrations. Henry Schuman, Inc., Publishers, 20 E. 70th St., New York 21, 1951.

This biography is a sensitive and warmly personal account of the life of Paul Ehrlich, the discoverer of salvarsan (606). The author was Ehrlich's personal secretary from 1902 until his death in 1915 so that she is eminently qualified to record her firsthand observations of Ehrlich's daily work in his laboratory and at home. Where previously the man's scientific accomplishments have been recognized, his mental and spiritual greatness, his perpetual humility and his innate sympathy and kindliness toward his fellow man are now observed. The introduction by Sir Henry Dale confirms the subsequent story.

This is the story of Ehrlich's whole life, though it emphasizes the period during which the author worked for him. We learn of his early fascination with chemistry, his essential work in serum therapy, his development of "the side-chain theory," his growing preoccupation with chemotherapy and his discovery of salvarsan, which to him was only a step in the expansion of chemotherapy. The book is not an impersonal collection of facts and correspondence. It is, rather, a kaleidoscope of intimate glimpses into the cluttered laboratory and office in which Ehrlich performed much of his life work. The glimpses of his family life, while limited, serve to balance the material.

The way in which this book came to be written is not without interest. Miss Marquardt left Germany in 1929 for a voluntary exile in Paris where she remained through World War II. There she was discovered by Sir Almroth Wright in 1946 and brought to England where she is now collecting and collating a definitive edition of Ehrlich's papers for publication by the Royal Society.

This book is the only available personal record of Ehrlich's activities. A previous work by the same author was destroyed by the Nazis. The format is excellent, and the illustrations are both numerous and of particular interest since they include portraits of many contemporary scientists. Ehrlich's biographical data is summarized at the end, including chronologies of personal dates, doctorates, prizes of honor and orders bestowed on Ehrlich and his memberships in scientific societies.

The book is recommended especially to those readers whose knowledge of chemotherapy dates from the advent of the sulfonamides. Ehrlich's personal work ended in 1915, but modern chemotherapy is a direct outgrowth of his work and, more important, his theories.

Training in Clinical Psychology. Compiled and edited by Victor C. Raimy. By staff of Conference on Graduate Education in Clinical Psychology held at Boulder, Colorado in August of 1949 sponsored by American Psychological Association, under grant from National Institute of Mental Health, United States Public Health Service, Federal Security Agency. Cloth. $4; text edition; $3. Pp. 253. Prentice-Hall, Inc., 70 5th Ave., New York 11, 1950.

This book concerns problems of the training of clinical psychologists. It includes a consideration of goals, methods and therapeutic practices of that profession. Training methods involve the attempt to correlate concurrently both the theoretical and applied aspects of psychology in a thoroughly interrelated manner.

An introduction describing today's problem is presented by Robert H. Felix, M.D., director, National Institute of Mental Health. The book mentions present society's need for increased numbers of trained psychologists and describes the several professional levels of training. A "core curriculum" for training in clinical psychology is given, which has the stated goals of teaching content, developing skills, inculcating attitudes and organizing material in a manner wherein diagnostic and therapeutic techniques will be integrated with current theories of personality and behavior.

This book should be of particular value to beginning students in the field of clinical psychology for presentation of an over-all picture. For those involved with graduate instruction, Appendix A includes a recommended graduate training program.

Radiation Monitoring in Atomic Defense. By Dwight E. Gray, Chief, Navy Research Section, Library of Congress, Washington, D. C., and John H. Martens. Cloth. $2. Pp. 122, with 20 illustrations. D. Van Nostrand Company, Inc., 250 4th Ave., New York 3; 228 Bloor St., W., Toronto 5; Macmillan & Co., Ltd., 10 St. Martin's St., Leicester Sq., London, W.C.2, 1951.

The preface states that this book is based on radiological plans and technics developed by the Federal Civil Defense Administration and the Atomic Energy Commission. Three opening chapters briefly sketch the nature of nuclear radiations and indicate the differences between ordinary explosions and those of atomic bombs. A distinction is made between immediate and residual radiations, and the means used to detect and measure residual ionizing radiations are described in general terms. The second half of the book pictures and discusses particular instruments now available for detecting, measuring and recording such radiations; these instruments include the Geiger counter survey meter, the ionization chamber survey meter, the proportional alpha counter, pocket chambers and dosimeters, film badge dosimeters and the Atomic Energy Commission emergency monitoring kit. The book concludes with information on future defense monitoring instruments and standard calibration sources; it also contains a bibliography and index. It is to be commended for its concrete, straightforward style and will prove extremely useful to professional and nonprofessional groups alike.

Wheeler and Jack's Handbook of Medicine. Revised by Robert Coope, M.D., B.Sc., F.R.C.P., Physician, Liverpool Royal Infirmary, Liverpool. Eleventh edition. Cloth. $5. Pp. 648, with 62 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1950.

This book is designed to help medical students pass their final examinations. While the subjects discussed are numerous and the field very broad, the individual section on each disease is intentionally brief. The author aims only to give the fundamentals, with which the students may observe these conditions in the wards and possibly elsewhere for the details. The discussion of appendicitis, for example, occupies only two pages, including the etiology, morbid anatomy, symptoms and treatment. That this handbook has served its purpose is indicated by the fact that 11 editions have been published since 1894. The last previous edition was published 10 years ago. Dr. Robert Coope is a lecturer in clinical medicine, applied physiology and clinical chemistry at the University of Liverpool.

Oral Pathology: A Histological, Roentgenological, and Clinical Study of the Diseases of the Teeth, Jaws, and Mouth. By Kurt H. Thoma, D.M.D., F.D.S., R.C.S., Brackett Professor of Oral Pathology, Harvard University, Cambridge, Mass. Third edition. Cloth. $17.50. Pp. 1592, with 1660 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1950.

The author presents in this book a histological, roentgenological and clinical study of the diseases of the teeth, jaws and mouth. The preface states: "This textbook on pathology not only covers the histologic study of oral disease, but also endeavors to correlate the microscopic picture with the roentgen and clinical findings, thereby demonstrating the value of pathology as a vital part of clinical practice. Most texts concentrate on dental pathology and treat the remaining subject matter in a cursory manner. This may have been adequate when dentists concerned themselves only with the treatment and filling of teeth, but today the student demands a wider horizon, because as a practitioner he may be consulted about conditions of the oral mucosa and jaws which may be due not only to local infection or tumor formation, but often to somatic disease. Thus, the alert dental diagnostician is often in a position to give valuable advice to his patient so that the latter may receive proper medical attention. Blood dyscrasia, food deficiencies, metabolic disturbances, and many skin diseases come under this heading, and it may be truly said that the tongue and oral mucosa constitute a barometer, a mirror which reflects the state of health of the patient."

This volume comes as nearly as is possible to serving as a textbook for the student and at the same time being complete enough to be of great value to the practitioner and teacher. Little fault, if any, can be found in the coverage of the subject in each chapter. The reader who desires a more detailed treatment of the subject in which he is interested can find it by referring to the comprehensive and useful list of references given at the end of each chapter. As an example, chapter 8 on dental caries covers 73 pages with a list of 325 references. The remaining 46 chapters follow this pattern, with few exceptions.

This book is well written and adequately covers the field of oral pathology. Illustrations are excellent and well chosen and freely used throughout the text. The paper is of good quality and the type extremely readable. Dr. Thoma has made a valuable and extensive contribution to the field of oral pathology. This textbook is recommended for anyone interested in oral pathology.

Elsevier's Encyclopædia of Organic Chemistry. Edited by F. Radt. Founded by E. Josephy and F. Radt. Series III, Carboisocylic Condensed Compounds. Volume 12B: Naphthalene. A. Compounds Containing One Naphthalene Nucleus. Pp. 1053-2187: Hydroxy Compounds. Cloth. $104; $91 to subscribers to series III; $78 to subscribers to complete work. Pp. 1053-2187. Elsevier Publishing Company, Inc., 250 Fifth Ave., New York 3; 118 Spuistraat, Amsterdam-C., Netherlands; Cleaver-Hume Press, 42a S. Audley St., London, W.1, 1950.

The sixth volume to appear, this is the third devoted to a description of compounds having the naphthalene ring structure. This book includes the hydroxy derivatives of compounds containing one naphthalene nucleus and those naphthols containing halogens, nitro groups, amino groups and azo compounds. This volume includes literature references through 1944 and those references concerned with structure of compounds up to 1950. As in previous volumes, the physiologic properties of the more widely known substances are presented with literature references. Among those substances for which this information is included are 1-naphthol, 2-naphthol, 2-4-dinitro-1-naphthol, orange I, orange II and many others. Menadiol and vitamin K, hydroquinone (dihydrovitamin K) and their numerous derivatives having antihemorrhagic activity are described.

Exotische Krankheiten und Krankheitsverläufe. Von Dr.med. F. O. Höring, apl. Prof. für innere und Tropenmedizin an der Universität Tübingen. Cloth. 36 marks; $8.55. Pp. 407, with 51 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A.: Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

This volume includes a complete discussion of all tropical diseases. The emphasis is placed on the clinical course rather than on the discussion of the pathogenic agents. The discussion is up to date, the book attractively printed. It does not contain any illustrations except for an occasional temperature chart.

QUERIES AND MINOR NOTES

TREATMENT OF WHOOPING COUGH

To the Editor:—*What effective treatment would you advise against whooping cough?* M.D., *Belgian Congo.*

Answer.—The following outline perhaps is representative of various modes of management of whooping cough.

1. Expert medical and nursing care: hospitalization at proper medical centers when indicated (young infants and seriously ill older patients), specially trained personnel, 24 hour attendance, to avoid sudden death from acute asphyxial paroxysms of respiratory or neurologic origin.

2. Measures to maintain adequate oxygenation: maintenance of clear respiratory passages (postural drainage; aspiration of nose, throat, or both), supply of atmosphere rich in oxygen (oxygen tents or mechanical hoods), manual artificial respiration to tide patients over periods of acute asphyxia secondary to severe paroxysms or convulsions.

3. Maintenance of adequate nutritional status: oral alimentation (special technics when indicated, such as medicine dropper, gavage, refeeding when vomiting occurs shortly after feeding, frequent small feedings, low fat diet, preprandial and postprandial aspiration to remove mucus, preprandial medication with drugs such as phenobarbital and/or tincture of belladonna); parenteral alimentation (electrolytes adapted to acidosis or alkalosis, with added dextrose and protein hydrolysates when specially indicated; plasma or blood for special cases).

4. Specific serum therapy (only human serums are recommended): for infants in particular and for disease of moderate to marked severity in any age period, particularly in presence of various complications (respiratory, nutritional, neurologic). The following human serums are available: hyperimmune types which are unconcentrated, partially concentrated (lyophilized serum) or markedly concentrated (concentrated globulin fraction, commercially available). The serum may be given intramuscularly. Only the unconcentrated human serum should be administered intravenously, after being significantly diluted with an appropriate fluid. The volume and number of injections are governed by the severity of the individual case. The use of serum seems to reduce the incidence of complications, the mortality and the course of the uncomplicated disease.

5. Chemotherapeusis: indicated to shorten and attenuate the course of the uncomplicated disease and to control secondary infections (respiratory, gastrointestinal, and neurologic) in the complicated cases. The materials available are sulfonamides (especially sulfadiazine and gantrisin®—preferably the latter), penicillin (most valuable parenterally), streptomycin (aerosol or injection therapy) and chloramphenicol or aureomycin. Concerning clinical results, it is accepted that the various compounds (particularly aureomycin and chloramphenicol) reduce the incidence of complications. Controversy still surrounds the question of the effect of chemotherapy on the course of the uncomplicated disease. However, it is obvious that chemotherapy, particularly with aureomycin or chloramphenicol, is indicated in all cases, to attain the known and anticipated effects of these drugs.

6. Management of complications: (*a*) gastrointestinal (vomiting, diarrhea, anorexia, sublingual ulcers, acid-base disturbances of the blood, malnutrition); (*b*) respiratory (otitis media, acute respiratory arrest with asphyxia, nasopharyngitis, persistent cough, atelectasis, pneumonia, emphysema, pulmonary tuberculosis, nasal hemorrhage); (*c*) neurologic (aphasia, behavior disturbances, inflammatory complications, such as meningitis due to Hemophilus influenzae, Pneumococcus, tuberculosis; hemorrhages of massive or scattered type; convulsions of varied etiology); (*d*) cardiovascular ("shock" following convulsions, severe paroxysms of coughing, dehydration and electrolyte imbalance).

PEYRONIE'S DISEASE

To the Editor:—*Nine months ago, a man reported that he noticed during a "urinary erection," a decided bend at the dorsal side of the penis. He tried to force the penis into a straight position, but the bend resisted his effort. Returning to me several times during the intervening months, he reported that the bend persisted, seemingly becoming more acute but not increasing laterally. This man is 80 years old, with moderate enlargement of the prostate. A few days ago, another man came to me with the same complaint. He is 59 years old with no prostatic enlargement. He stated that sexual intercourse will be impossible. In both these cases the bend occurred suddenly. In 50 years of practice, I have never encountered any case similar to these two. I will be interested in any information you can give me.*

G. W. Moore, M.D., Bay City, Mich.

Answer.—The description of the symptoms of these two patients suggests classic Peyronie's disease (induration of the corpora cavernosa). The bending is caused by the irregular formation of fibrous or scarlike tissue plaques in the sheath or septum of the corpora cavernosa. The cause is unknown. There is no evidence of inflammation or carcinoma. Rarely are men under 30 years of age affected. Differences of opinion exist regarding treatment. Recurrence and loss of potency after surgical excision of the lesion may occur. Radium and roentgen ray therapy often halt the progress of the disease. Some good results have recently been reported with orally administered tocopherols; eprolin (a concentrate of natural alpha, beta and gamma tocopherols) in 100 mg. doses three times a day or tocopherol acetate in the same dosage continued for several months, then intermittently, seems to cause some regression of the lesion. Reassurance of the patient from time to time is in some cases important.

CANKER SORES

To the Editor:—*I have been treating a 28 year old blond woman for aphthous stomatitis (canker sore) without success. She has had these sores most of her life and is almost never without them for longer than a week at a time. They are worse just before menses and usually occur in crops over the buccal mucosa, tongue and over the pharynx. The lesions consist of discrete, yellow, slightly elevated areas surrounded by a reddish border. I have treated her with biweekly vaccinations with smallpox vaccine, weekly injections of bismuth and oxophenarsine hydrochloride (mapharsen®) and 5 per cent sodium perborate mouth washes. The patient thinks there may be some improvement in the number and painfulness of the lesions, but they still occur with exasperating regularity. I should appreciate your recommendations.*

J. P. Hodges, M.D., Center Point, Ala.

Answer.—Aphthous stomatitis always requires an allergic study. Most allergists agree that food allergy is the usual cause. Walnuts, spices and fruits are to be suspected; other foods commonly responsible for allergy must be considered. Because of the usual impossibility of determining clinical food allergy with skin tests Rowe (Elimination Diets and the Patient's Allergies, ed. 2, Philadelphia, Lea & Febiger, 1944) has long prescribed his fruit-free elimination diet, which excludes all fruits, milk, eggs, wheat, chocolate, spices and certain other foods, when canker sores and, in fact, other gastrointestinal allergies occur. He holds that the unfortunate delay in recognition of food allergy as a common cause of canker sores and other gastrointestinal allergy is due to the failure to realize the fallibility of the skin test in the determination of such allergy and failure to use trial diets accurately for the study of such allergy. The published menus and recipes for bakery products for this diet must be used. No trace of the suspected food can be taken, and satisfactory weight must be maintained with the foods in the diet. If constant canker sores are present,

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

relief in two to three weeks, lasting for one to two weeks, indicates exclusion of allergenic causative foods. If attacks occur every two to six weeks, then relief must continue while the elimination diet is used for at least twice as long as previous periods of intervening relief. When relief is assured, the individual foods can be added, each being eaten daily for five to seven days before another is added. Foods that cause the lesions to recur must be excluded, usually for months or even for longer periods, before tolerance for them returns.

Canker sores also occur from allergy to various drugs and occasionally to allergens in dentifrices and ingredients of mouth washes. Bacterial allergy may be a rare cause, as suggested by crops of such lesions following injections of certain vaccines and relief of such lesions when foci of infection are removed. The possibility of an electrolytic reaction between gold and amalgam fillings has been suggested in the literature. Canker sores occur, moreover, in debilitated patients, but in them the major cause may be food allergy.

In almost all patients with aphthous stomatitis, other oral allergic reactions, gastric distention, substernal soreness and fulness, nausea, vomiting, abdominal soreness, pain or distress, diarrhea, mucous colitis, constipation or other gastrointestinal symptoms usually due to food allergy exist. Of course all other causes of such gastrointestinal symptoms must be thoroughly ruled out by indicated laboratory investigations and roentgen ray studies and physical examination. Moreover, other recognized manifestations of allergy may be present. Usually the dietary history, or, occasionally, the drug history reveals evidence of possible food or drug allergy. In rare cases, canker sores with or without allergic stomatitis, glossitis or pharyngitis may be the only manifestation of clinical allergy.

In view of the failure of the medicaments mentioned in the query, this study of allergy, especially to foods, is required. This must be accurately done, however, for dependable results.

MYOSITIS OSSIFICANS

To the Editor:—*My 6 year old son was injured in a football game when another player stepped on his right arm above the elbow. The cleats caused considerable damage to the muscle, resulting in hemorrhage and hematoma with considerable swelling. Roentgenograms revealed no fracture, but the boy was able to extend his arm only about two thirds of normal. About two weeks after injury a hard mass was outlined and roentgenograms revealed calcification in the brachialis anticus muscle. At present there is no pain and practically no discomfort and extension is still about two thirds complete. Kindly suggest treatment for this condition.*

Daniel L. Hollis, M.D., Biloxi, Miss.

This inquiry was referred to two authorities, whose respective replies follow.—Ed.

Answer.—The findings in this inquiry are typical of myositis ossificans resulting from trauma. The brachialis anticus muscle is the favorite site for this, especially after injury about the elbow joint. In this instance, in all probability, there has been some tearing of the periosteum and progressive development of callus in the muscle proper. The history of onset is typical. Such calcification proceeds fairly rapidly, finally reaches a point where it remains stationary and then, in many instances, shows evidence of regression.

It is important during the formation period that further trauma be prevented. There should be no attempt to forcibly stretch the elbow. Normal use within the limits of pain and discomfort, in all probability, will not aggravate this condition. If, after the bone becomes mature, it should interfere with function, some thought might be given to surgical excision. Should this be done, there is always some possibility of recurrence of the calcification, especially in this area.

Answer.—Clinically and roentgenologically this patient has myositis ossificans of the brachialis anticus muscle, which is not an uncommon condition. In the acute or subacute stage, rest of the elbow in a plaster cast for a period of four to six weeks is advisable. At the end of this time the cast may be bivalved and diathermy together with light massage used. If the condition remains for a prolonged period of time without reversal of the process of precipitating calcium in this muscle definite bone formation with trabeculation will result. Not unti mature bone has developed should surgery be considered, an then surgical excision of the entire mass is indicated. At n time should either active or passive stretching exercises fo the elbow during any phase of myositis ossificans be permitted This would cause increasing damage to the muscle.

The prognosis in most cases with conservative treatment, b the use of complete rest of the part, diathermy and gentl massage, is good. Also, in the late stage, after mature bon has formed, the prognosis is good with surgical excision.

CARDIAC ARRHYTHMIA IN A MYASTHENIC

To the Editor:—*In view of the known effect of quinine o myasthenia gravis, is the administration of quinidine sulfat or lactate contraindicated in myasthenic patients, assumin that the cardiac arrhythmia is amenable to quinidine?*

Nicholas M. Greene, M.D., Cambridge, Mass.

Answer.—There are no reported instances in which quin dine, or any of its salts, has been administered to patients wit myasthenia gravis. However, quinidine is the dextrorotator isomer of quinine, and it has physiological action similar t that of the levorotatory quinine. Both quinidine and quinin "are depressant to skeletal . . . muscle," and both prolon the refractory phase and contractility (Goodman, L., and Gil man, A.: Pharmacological Basis of Therapeutics, New York The MacMillan Company, 1941, p. 539). Quinidine, like qui nine, antagonizes the muscle contraction produced by acetyl choline or neostigmine (Krantz, J. C. Jr., and Carr, C. J. Pharmacological Principles of Medical Practice, Baltimor Williams and Wilkins, 1949, p. 721). The response of norma mammalian muscle to injected acetylcholine is abolished b quinine, owing largely to the curariform action of quinin (Harvey, A. M.: Actions of Quinine on Skeletal Muscle, . *Physiol.* **95**:45, 1939).

The action of quinine in a patient with myasthenia gravis as recorded by Harvey and Whitehill (*Bull. Johns Hopkin Hosp.* **61**:216, 1937) establishes the fact that quinine causes a increase in symptoms of the disease, and, since the actions o quinidine on skeletal muscle are identical with those of quinine there is every reason to believe that quinidine would have th same effect when administered to a myasthenic patient.

It appears certain, therefore, that it would be hazardous t administer quinidine sulfate or lactate in myasthenia gravis i the treatment of a cardiac arrhythmia or for any other reaso except under the most urgent emergency circumstances. In thi case, should quinidine be given, its unfavorable action on th status of the myasthenia could be controlled by the injectio of neostigmine, which would also vitiate its effect on the cardia musculature. Therefore, it is preferable to refrain from th administration of quinidine to myasthenic patients. An attemp should be made to control cardiac arrhythmias by othe methods.

SWOLLEN LIPS

To the Editor:—*A 43 year old male architect has greatl swollen lips, which itch and burn. The lips became swolle about Aug. 1, 1950, and became increasingly worse with n periodicity or remissions. Physical examination revealed n cause. There has been no change in residence or occupation Needless to say, I have tested him for external contacts. H does not handle pencils, wood, crayon or ink. I have trie special diets.*

M.D., Massachusetts.

Answer.—Gross swelling of the lips, with itching and burning but no necrosis, probably means angioneurotic edema, despite the lack of remission. This "solid edema" is considered to be due to hypersensitivity, although it is described as a "symptom complex," and focal infection, endocrine disorders, infectious diseases and emotional disturbances have been incriminated. Drug idiosyncracy, even with a fixed eruption, is not probable but should be considered. It may occur after years of drug usage, and results of patch tests are often negative. *Contact stomatitis is a similar, often localized, reaction,* and results of patch tests are usually positive. Lymphangiectasis is a soft yellowish swelling without inflammation or the sensory symptoms. The problem requires acute medical detection, and the questioner has made a good start. A few irritants or antigens that have been reported to be sometimes causative, but which are not mentioned in the question, are denture materials, alcohol-containing beverages, cosmetics of women outside the family, smoking and perhaps certain foods for which tests have not been made. Eosinophilia may be significant. Treatment must depend on solution of the complex problem of etiology, with symptomatic therapy used meanwhile. Epinephrine injection, ephedrine capsules and antihistamines (in the form of pills, capsules or ointments) may have both therapeutic and diagnostic value.

ESTIMATION OF THIOCYANATE LEVEL

To the Editor:—*I have checked the urine of patients for thiocyanates using the same procedure as for blood thiocyanates. The results have varied from 0 to 26 mg. per 100 cc. Patients who show increased amounts appear to have a disease of unknown etiology or a virus condition. The patient who had 26 mg. per 100 cc. was given a diagnosis of severe aphthous stomatitis. Other patients had vague gastrointestinal upsets. In this group I have been able to tell which will have a higher thiocyanate, 0.6 to 5 mg. per 100 cc., from history and from observation of tongue and throat. Some patients with virus pneumonia also show this finding. One case diagnosed periarteritis nodosa and one case of sarcoidosis had similar findings. The urine of most of the patients has a* p_H *of 7. Two patients had a serum* p_H *of 7.8 and 7.9. I would like to know if this test can be used for urine as I have done. If not, what would be the cause of variation in color reaction?*

George C. Furr, M.D., Clarksdale, Miss.

Answer.—The quantitative estimation of thiocyanates is conventionally effected by the measurement of the red color developed by the addition of acidified ferric nitrate. This test can be applied to serum, plasma or urine, provided all proteins present are removed by precipitation. Some urine samples become turbid after addition of the protein precipitants, and such turbidities interfere with electrometric color measurements. Centrifugation will normally clarify these solutions. High thiocyanate levels occur as a result of thiocyanate therapy for hypertension and also has been reported to be due to tobacco smoking, low protein intake and exposure to acrylonitrile fumes in industrial establishments.

CONGENITAL SYPHILIS

To the Editor:—*What treatment should be given a newborn with a doubtful cord serology? The Kolmer reaction was positive and the Kahn negative. The baby weighed 10 pounds (4,536 Gm.) at birth; there was no definite evidence of congenital syphilis, although there is a suggestive "saddle nose." The mother was first seen in the last trimester and had a positive Kolmer and a negative Kahn reaction. She had received treatment three years ago. She was started on the Army 26 week treatment and received 20 intravenous injections of 0.6 Gm. of oxophenarsine hydrochloride and 5 injections of 1 cc. of bismuth prior to delivery. The mother's serologic reaction (specimen taken from arm) was negative at the time of delivery.* *F. G. Freeman, M.D., Pratt, Kan.*

Answer.—This infant probably has congenital syphilis and should immediately be treated with aqueous penicillin, 20,000 units, intramuscularly, daily for 15 days. Follow-up serology tests for many years are recommended. The mother presumably still has syphilis and should be treated with intramuscular injections of penicillin, 600,000 units daily for 10 days. Eight weeks after treatment Wassermann and Kahn tests should be made. If results are negative, a complete spinal fluid examination, including a Wassermann test, should be made. If the serologic reactions are positive, a record of the quantitative titer of the blood is helpful in the follow-up care. If the quantitative blood titer increases additional therapy is necessary. A positive spinal fluid reaction would necessitate additional penicillin and/or aureomycin therapy.

ANEMIA

To the Editor:—*A 55 year old man has a hemoglobin level of 7 Gm. and a blood cell count of 2,290,000. The white blood cell and differential counts are normal. There is free hydrochloric acid in the gastric juice. No cause for the anemia has been found. Could his occupation be a cause? He mixes by hand amorphous red phosphorus, pulverized tin and pulverized copper. This is then rubbed by hand on metal chains with graphite. He has been engaged in this occupation for many years.* *M.D., Rhode Island.*

Answer.—The patient's long use of the mixture and its frequent employment in jewelry shops, apparently without noticeable anemia, strongly suggest that there is no connection between the procedure and the anemia; furthermore, no evidence thereto has been found in the literature. Of the ingredients composing the powder, amorphous red phosphorus—the kind used in safety matches—can cause skin lesions but is not known to be hemolytic or a cause of anemia. Nor is powdered tin known to be toxic. Long exposure to copper has been shown to be followed by various visceral lesions, such as Mallory's (unconfirmed) variety of human cirrhosis of the liver, and it is conceivable that similar damage to the bone marrow might cause a dyshemopoietic anemia. Also, amorphous copper contains about 0.1 per cent arsenic, which in the form of hydrogen arsenide gas (AsH_3) is a powerful blood poison. However, it may be safely accepted that it is to the highest degree unlikely that the copper is a causative factor in this case. Nor can graphite be incriminated on any factual basis.

The hematologic data rule out primary blood diseases, such as pernicious anemia, the leukemias and congenital hemolytic icterus, but do not exclude a number of secondary forms. A family history of similar anemia, jaundice or splenomegaly would be significant. Among other studies, fragility, reticulocyte percentage and bilirubinemia tests, sternal marrow biopsy and controlled responses to vitamins, hematinics and special diets should be made. Frequent check-up is important in revealing trends that may help in the establishment of a correct diagnosis.

POSTPARTUM PLASMA AND ARTHRITIS

To the Editor:—*Where can I get information concerning the use of postpartum blood plasma in the treatment of arthritis?*

M. E. Monroe, M.D., Hartford, Wis.

Answer.—L. W. Granirer (Science, 111:204 [Feb. 24] 1950) first reported that sustained remission can be produced in rheumatoid arthritis by the administration of suitable amounts of postpartum plasma. The remission was characterized by an improved sense of well-being, brighter outlook, increased appetite, a disappearance of joint symptoms and microcytic anemia, gain in weight and restoration to normal of the albumin globulin ratio. In general, the characteristic response was a striking clinical improvement. There were no toxic effects, and in 320 postpartum plasma transfusions, there were no cases of homologous serum hepatitis. The longest remission following cessation of therapy was 16 weeks, and the shortest was three weeks.

Despite the proteinemia, the mothers from whom this plasma was taken had no anemia or edema. The occurrence of pregnancy in patients with rheumatoid arthritis produces a partial or complete remission in a high percentage of cases. There is suggestive evidence that this behavior is not due solely to steroidal factors.

PROCAINE TO OVERCOME PAIN OF INJECTIONS

To the Editor:—*Is there any objection to the use of small amounts of procaine mixed with liver extract or vitamins for parenteral administration for prevention of some of the local pain following injection?*

Frank Springer, M.D., Elmwood, Wis.

Answer.—Chemical or physiological incompatibility between small amounts of procaine and liver extract or vitamins in mixtures for parenteral use has not been reported. Solutions containing small quantities of 0.5 per cent procaine hydrochloride with crude liver extract or thiamine have been administered intramuscularly with apparent safety and efficacy.

SARCOIDOSIS

To the Editor:—*I cannot find much in the textbooks on sarcoid. My problem involves a man in whom the tumors involve the inguinal canal structures, proved by biopsy. I am especially interested in knowing whether the antibiotics are effective.* *Walter E. Heinz, M.D., Willmar, Minn.*

Answer.—So far none of the available antibiotics have been effective in the treatment of sarcoidosis. Some patients have responded slowly after the use of urethane as it is administered in patients with chronic leukemia. Others have had a slow and progressive regression of the lesion following conservative rest treatment as is practiced in patients with tuberculosis.

BIRTH CONTROL AND CHRONIC CYSTIC MASTITIS

To the Editor:—*We do not fully agree with the answer to the query on "Birth Control and Chronic Cystic Mastitis" in* The Journal, *Dec. 30, 1950, page 1602. An unequivocal statement that women with chronic cystic mastitis should avoid using diaphragms for contraception is a serious matter if one considers the frequency with which this condition is diagnosed in women of childbearing age and the widespread use of the diaphragm for contraception. The answer implies that contraception increases the risk of cancer of the breast in women with chronic cystic mastitis and states that use of the diaphragm for contraception increases the risk of cancer of the cervix. We believe that neither of these theses can be proved, that the latter is incorrect and that the former requires considerable qualification.*

Chronic cystic mastitis is a term used widely and loosely, and no uniform criteria exist on which one could base such a diagnosis. The clinician frequently has difficulty differentiating the physiological changes in a woman's breast from the lesions of chronic cystic mastitis. The criteria for histological diagnosis vary greatly among pathologists. The varied breast lesions included by this term probably have no common etiologic factor, and it is likely that only a small percentage of patients with chronic cystic mastitis have a significant endocrine dysfunction.

Whether chronic cystic mastitis predisposes to cancer of the breast has been hotly debated. The statistical studies of Warren (The Relation of Chronic Mastitis to Carcinoma of the Breast, Surg., Gynec. & Obst. **71:**257 [Sept.] 1940) *indicate that it does, but other authorities cited in the study by Foote and Stewart (Comparative Studies of Cancerous Versus Non-Cancerous Breasts,* Ann. Surg. **121:**6 [Jan.] **121:**197 [Feb.] 1945) *do not believe that the extent of predisposition is significant except in the few cases with papillary hyperplasia. While statistical studies show that cancer of the breast is more frequent in women who have not borne children and in those who, having borne them, do not suckle them normally, these data do not prove that women with chronic cystic mastitis who do not become pregnant are more susceptible to cancer of the breast than other women who do not become pregnant. The use of the diaphragm for contraception is certainly not specific in this relationship, and other means of contraception should have the same effect, if any. Furthermore, contraception is generally employed as a method for properly spacing pregnancies and not for their permanent prevention.*

The predisposition of patients with chronic cystic mastitis to carcinoma of the cervix is even less definite. In considering only those patients exhibiting chronic cystic mastitis who also have hormonal imbalance, we know of no proof to support the contention that hormonal imbalance is a significant factor in producing cervical cancer. Furthermore, the answer in The Journal *indicates that vaginal diaphragms (or the vaginal jelly usually used with them) cause chronic irritation and that this irritation may cause cancer. We are not aware of any proof for this claim. As a matter of fact, acid vaginal jellies similar to those used with a contraceptive diaphragm have proved beneficial in the treatment of certain cervical lesions and irritations. Even if one grants that diaphragm contraception may cause irritation of the cervix, this irritation must be greater than that produced by childbearing, else the argument against diaphragms cannot hold. Such an assumption, in our opinion, is absurd. On the other hand, the clinical experience of many gynecologists has demonstrated that vaginal delivery is an extremely important cause of chronic cervicitis, which in turn is an important factor in the development of cervical cancer. Cervical cancer is commoner in women who have borne children than in unmarried or childless women of comparable age. Thus, if one were solely interested in preventing cervical cancer, one would argue more logically for diaphragm contraception than against it.*

We have no interest in promoting contraception in general or in advocating specific methods of contraception. We believe, notwithstanding, that The Journal's *unqualified rejection of the diaphragm as a method of contraception for use by women exhibiting chronic cystic mastitis is not justified, if it is based on the claim that such use may cause cervical and breast cancer. The evidence is insufficient to warrant a prohibition of this method of contraception among the probable thousands of women having chronic cystic mastitis who now use it.*

William T. Fitts Jr., M.D.,
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To the Editor:—*In* The Journal *of December 30, the reply to the query on "Birth Control and Chronic Cystic Mastitis" seems to be so misleading that I believe it calls for correction. I think your readers should be informed that use of a diaphragm pessary would have no greater and no different an indirect influence, if any, on chronic cystic mastitis of the breasts than would absence of a pregnancy, whether that absence was due to use of a contraceptive, infertility or continence. That there is any such influence, furthermore, is by no means so well established a fact as the reply to the query would indicate.*

Even more misleading is the statement that "the use of any instrument which might act as an irritant would be dangerous." The inference is that a diaphragm is an "instrument," which is not the case in the usual use of the word, and that it is an "irritant," which is never the case if it has been fitted by a competent physician.

William T. Kennedy, M.D.,
Chairman, Medical Committee,
Planned Parenthood Federation
of America, Inc.,
501 Madison Avenue,
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To the Editor:—*I have received two letters insisting that because I am Editor of the Yearbook of Obstetrics and Gynecology I should comment on the answer to the query on "Birth Control and Chronic Cystic Mastitis." I assure you that most gynecologists would disagree vehemently with the answer. There is no basis in fact for the following statements: "The use of a diaphragm pessary would indirectly influence the chronic cystic mastitis from which your patient suffers. This would come about from the continued ovary stimulation to the breast without pregnancy intervening to permit normal physiological function. . . . Carcinoma of the breast is more frequent in women who have had children but did not suckle them and married women who have prevented pregnancy. . . . Inasmuch as the chronic cystic mastitis is evidence of endocrine dysfunction in this patient, the use of any instrument which might act as an irritant would be dangerous, because chronic irritation in a patient predisposed to malignant disease may hasten the neoplastic changes." I should like to know on what statistical evidence these statements are based.*

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BASIC VALUES IN PROFESSIONAL EDUCATION

Aura E. Severinghaus, Ph.D., New York

I should like to explain briefly the organization and objectives of the Subcommittee on Preprofessional Education of the Survey of Medical Education and to report on what progress it has made up to the present time. When I was asked by Dr. Deitrick and members of the Survey Committee if I would accept the chairmanship and form this Subcommittee to conduct, in connection with the Survey on Medical Education, an independent but correlated study in the liberal arts colleges of this country, I was not unaware of the magnitude of the task or of the great responsibility which it implied. But I was also impressed by the opportunities it offered, if ample funds could be provided and if proper personnel could be secured to form the committee and to direct the study.

After more than six months of inquiries and consultations it was decided just a little over a year ago to invite seven persons to membership on the committee. All seven accepted. They are George P. Berry, M.D., dean of Harvard Medical School; Alan W. Brown, Ph.D., president of Hobart and William Smith Colleges; Merle Coulter, Ph.D., associate dean of the Division of Biological Sciences of the University of Chicago; Theodore M. Greene, Ph.D., professor of philosophy, master of Silleman College, Yale University; Frank R. Kille, Ph.D., dean of Carleton College; Franklin D. Murphy, M.D., dean of the University of Kansas Medical School, and John Romano, M.D., professor of psychiatry at University of Rochester School of Medicine.

In February 1950 I spoke to the advisory council of the survey as follows:

> The field director of this study has not yet been appointed. It is extremely important that the proper person be secured. He must be someone who has had wide experience in the liberal arts college, someone who has been thinking about the problems of general education and their relation to professional training. He must be able by his position in the field of education and by his previous contributions to command the respect and eager cooperation of those who are responsible for the educational programs in our colleges. It is not easy to obtain the services of such an individual, because obviously he will be occupying a position of responsibility. However, there are one or two such persons who I feel might well be interested and possibly even challenged by the opportunities which this survey presents. So much depends upon the selection of the proper leadership that I would be prepared to delay the study until we can get the man we want.

You can well understand my delight in being able to report to you that one of the two persons we had in mind became the director; the other, the associate director of the study: Harry J. Carman and William E. Cadbury Jr. The John and Mary R. Markle Foundation made a generous grant of $65,000 to support the work of the committee.

Our program calls for unhurried visits to approximately 100 colleges and universities which have been carefully selected. After formulating our areas of inquiry we visited some thirty nationally distributed campuses. Then we called representatives of these schools to meet with a few invited delegates from medical schools and secondary schools in a three day conference at Buck Hill Falls in November 1950. There we opened for discussion and debate in a series of workshops the questions we hoped to answer and the technics which we were employing to get the answers. Our strategy was that this conference would insure us against getting well along in our study only to discover some valuable area of information which we had failed to recognize and explore. This first national conference at Buck Hill Falls was for me, personally, one of the rewarding experiences of my life. When we have completed the survey we are proposing a second national conference to embrace all of the schools and additional delegates, and at this time we shall report our findings and decide on our recommendations.

May I introduce my comments on the objectives of the survey by saying first what we are not planning to do. We are not planning an indictment of preprofessional education. Ours is a fact-finding not a fault-finding effort. We are not telling the colleges what is right and what is wrong, what is good and what is bad in their programs of education. We want to listen as they describe their successes or confess their faults and their shortcomings and we stay long enough to gain some confidence in our own observations. We have resolved to make the survey as objective as possible.

Chairman, Subcommittee on Preprofessional Education; Associate Dean, Columbia University College of Physicians and Surgeons.

Read before the Council on Medical Education and Hospitals of the American Medical Association at the Forty-Seventh Annual Congress on Medical Education and Licensure, Chicago, Feb. 12, 1951.

I have already received numerous communications expressing the hope that we would standardize the premedical curriculum, the admission procedures and policies and the medical school requirements. I hope I will not be misunderstood when I say that we have no interest in attempting to standardize educational practices. Nothing disturbs me more than the efforts to regiment and standardize procedures which should, in my opinion, be further individualized. There was in education a time when progress could best be assured by standardization. But the liberal arts colleges are today not in that era. The late President Tresidder of Leland Stanford University pointed out clearly that with "the high standards which have now been established and the sound foundations laid, the time has come to arrest the growing trend toward inflexible standardization of all of our schools, in order that each institution may capitalize on its own rich experience and unique opportunities."

To be objective and open minded, however, does not mean that we must be empty minded. Anyone who is concerned with recruitment of students for the study of medicine knows what kinds of persons he is hoping to find. He also knows that in spite of the excess thousands of applications there are not enough of the kind he is looking for. Why shouldn't there be? This is the question that justified our survey efforts! In briefly elaborating on this question, which leads us at once to examine in the colleges their educational policies and philosophies, their curriculum, their advisory systems, their ideas of adequate preparation in the sciences and their attitude toward a balanced education for preprofessional students, may I again quote from my remarks made in February 1950 to the advisory council and to the Markle Foundation when this project was laid before them for their consideration.

> Most medical educators would agree, I believe, that required courses for medical school admission should be kept to a minimum in order that the greatest flexibility is granted the liberal arts college to plan an individual educational experience for every boy or girl. We do not go to college for "a quantitative body of memorized knowledge" as the newly elected President of Yale has so aptly phrased it, but to develop a taste for culture, a capacity and an interest to learn. I am not so much concerned with what courses a student takes, but I am concerned that he get in touch with inspiring teaching, that he learn to think, to explore, to face problems and make decisions, to work hard under his own dynamic drive, that he develop the capacity and desire for a never ending program of self education, and that he develop a faith in himself and in the job he hopes to do that will make him an emotionally stable and strongly enough motivated individual to see it through.
>
> We have reports that in many colleges the competition of admission to medical school has become so acute and the premedical students so large and influential a group that they have interfered with the educational program of the college. They have become a special interest group which believes that it has interests not common to the general student body. Their prime concern has become admission to medical school, not a liberal education. When students, who come into the college atmosphere where the discovery of truth and the free sharing of information and learning are the very life of it, will withhold from each other what they have learned in order to increase their competitive chances of medical school admission over those of their classmates, then it is high time that something is done about it. Every student should realize, and certainly his college teachers should realize, that he has come to the liberal arts college not to prepare for medical school but to prepare for life, that his great opportunity in the liberal arts college is to develop into a happier and more useful citizen. Therefore, I have no interest in attempting to bring about a more standardized premedical curriculum. I would go still further and say that there should not be any premedical curriculum.

This whole matter calls for thorough exploration in the survey. You may have noticed that I touched above upon the question of intellectual honesty. This is another problem we are exploring. Just what is the college student's conception of honesty? In fact, at times I am not altogether clear as to the college's own interpretation of honesty. I have received recommendation forms from premedical committees in which honesty and integrity are listed along with such items as appearance, poise and ability in the laboratory to be checked off in the appropriate spaces as excellent, good, fairly good. Now I ask you, what is fairly good honesty?

Together with integrity, I suppose we list emotional stability and sound motivation as the three most important intangible qualities which an applicant should possess, if he wishes to go into medicine. I wish to comment briefly on the latter two qualities.

I reported at Syracuse in May 1949, that although we were somewhat proud of our record of admission at the College of Physicians and Surgeons, nevertheless, in the ten years preceding, we had admitted 1,165 students from which number for all causes we lost 67. But of the 67 a committee on admission could hold itself responsible for not more than 47. Of these 47, 16 were dropped for emotional instability and seven for loss of motivation. Thus these two categories accounted for a half of our losses. My impression is that emotional instability is on the increase even among highly selected students and as the tensions of the present emergency tighten we can expect an even greater increase. What can be done about it?

Some of us have the fear that through the years in which our lives have been more and more dominated by the sciences and technology, and our colleges have become increasingly more liberal, more secular, more humanistic, more scientific, they have cultivated an academic detachment from major issues and basic values. Some of these do not lend themselves to scientific analysis. Thus a distinguished colleague of mine in denying the validity of any absolute values, in which he included hope, truth, faith and love has written that, "beyond the boundaries of scientific knowledge there is only the unknown, about which we know absolutely nothing. A proper scientist, if he sticks to his last, will not give an opinion on matters about which he knows absolutely nothing."

Well, I wonder. I am more inclined to agree with the late President of Carnegie Institute of Technology, Dr. Robert E. Doherty, who wrote as follows:

> One responsibility that no profession has adequately coped with has now assumed frightening importance. To what ends will professional men direct their energies and abilities?. . . The answer turns on a sense of values, especially the values by which professional men live and work. . . . The ends toward which abilities are used are just as important in determining the outcome in national life and individual life as the abilities themselves, and those ends are determined when values are adopted. Hence, recognition of the critical role of value

judgments and, therefore, of the importance of cultivating intelligent procedure in arriving at them, are educational "musts" of the first order.

Men have sold their sense of values for anything from a bowl of pottage to 30 pieces of silver. If it is true, as reported to me the other night by a radio listener, that a physician is about to be indicted for selling sick-leave certifications to striking railroad men in a time of national emergency for 60 cents a piece, I hope it will not be found that we graduated him.

It was with values that Benjamin Franklin was concerned two hundred years ago when he spoke as follows: "The rapid progress true science now makes occasions my regretting sometimes that I was born too soon. It is impossible to imagine the heighth to which may become in a thousand years the power of men over matter. O, that moral science were in as fair a way of improvement, that men would cease to be wolves to one another and that human beings would at length learn what they now improperly call humanity."

It was values and attitudes that McCauley was worrying about when he wrote this statement: "The objective of our technical age seems to be not to make men perfect, but to make imperfect men more comfortable."

It was with values that the great British historian, Arnold Toynbee, was thinking when he wrote this: "Men having learned how to annihilate space have thereby put themselves in constant danger of annihilating one another. The command of nature has been put into man's hands before he knows how to command himself."

It was a sense of values to which Sir Richard Moberly, the present chairman of the University Grants Committee in Britain, directed attention when, in his recent inspiring book *The Crisis in the University,* he discusses the ever sharpening fundamental issues between Communism and Christian Democracy. "Today," he says, "you bet your life that there is a God, or that there is not a God. You may freely choose which way you will lay your bet, but you may no longer decline the wager or reduce the stake."

Much of what I have said stems from hundreds of interviews which I have had during the last 10 years with students who are about to graduate from college. Whenever possible and when it seemed at all profitable I have explored this area of thought in my interviews. To be frank, I have for the last few years been conducting a survey of the colleges on my own. I should not want to leave the impression that a sense of moral value and a way of life can be taught in the college curriculum. But I am positive that students, most of whom come to the college with a background of untested values and attitudes discover for the first time that their values and attitudes are being subjected to critical analysis. What I am emphasizing is the need for an intelligent, friendly, sympathetic and understanding atmosphere in the colleges at this critical stage in the life of our students.

So far as they have thought and fought their way through this period of alternative choices and decision making and have made some beginning in building a philosophy of life, in developing a faith in themselves, their fellow men and the universe, a faith by which as professional men they can live and work—to that extent will they be on the road to emotional stability and sound motivation when they arrive in professional school. Finally, as professional school educators, let it not be charged against us with validity that students arrive in professional school with a clearer sense of values than they have when they leave it. Are the colleges meeting the challenge and their opportunities and responsibilities in this area? We believe we will have an answer when the survey is completed.

I would close with an expression of appreciation for the splendid cooperation which the colleges are giving to us, and I express the hope that when we have finished they will dare to feel that the time and energy and effort on their part has been justified.

PREPROFESSIONAL SURVEY OF MEDICAL EDUCATION: A PROGRESS REPORT

Harry J. Carman, Ph.D., New York

I should like to outline certain aspects of the work of the Subcommittee on Preprofessional Education of the Survey of Medical Education, which, I believe, will help to explain this part of our over-all task. First of all what is the job of the chairman, the director and the associate director of the preprofessional study? From the outset we have thought of our job as being threefold: (1) to devise a yardstick in terms of the qualifications a person should possess to go forward to a successful career in medicine, (2) to ascertain the extent to which our undergraduate colleges in terms of student selection, guidance and education are providing the kind of students the medical schools want and (3) on the basis of our investigation, to prepare as detailed a report as possible of our findings.

It was logical that we should address ourselves in the first instance to the question of qualifications. In formulating what seem to us to be the qualifications that a person who proposes to go into medicine should have, we have drawn upon several sources. In the first place we canvassed the members of the subcommittee itself and especially its chairman who has had a rich experience in dealing with young men and women proposing to enter upon training for medical careers and who has given long and earnest thought to evaluating premedical students. We also sought the advice of the deans of a few of our leading medical colleges and of many of our undergraduate liberal arts colleges.

Most important of all, in some respects, were the opinions obtained from premedical advisers and other

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Director of Study, Subcommittee on Preprofessional Education; dean emeritus of Columbia College, Columbia University.

Read before the Council on Medical Education and Hospitals of the American Medical Association at the Forty-Seventh Annual Congress on Medical Education and Licensure, Chicago, Feb. 12, 1951.

guidance officers. In this connection the subcommittee sponsored a three day workshop conference at Buck Hill Falls last November to which approximately one hundred deans and premedical advisers were invited. By means of workshop groups the conference addressed itself to five important considerations: (1) the advisory system, (2) science in preparation for medical school, (3) a balanced education, (4) recruitment for the liberal arts colleges and (5) special interest groups and problems of motivation. Formal speeches were kept to a minimum. In fact only two were given. One was by Dean Severinghaus, Columbia University College of Physicians and Surgeons, and the other by Professor Theodore M. Greene of Yale University. The analyst for each workshop prepared summary statements. Two copies of these statements were subsequently mailed to every person attending the conference, one to be retained and the other containing criticisms and further suggestions to be returned to the office of the director of the study. Copies of the addresses delivered by Dean Severinghaus and Professor Greene will be mailed to each member of the conference shortly. The results of the conference were most fruitful in helping us, among other things, to clarify our thoughts about this whole matter of fitness for medical training.

As far as the subcommittee is concerned the following list has been devised in the first instance merely to serve as a yardstick. Here is the yardstick list:

1. Sterling character. Admission to a medical school should be denied to any person without integrity. The doors should be closed tight to parasites, leaners, cheaters and to those whose ways of life are otherwise not honorable.

2. Sound motives for wishing to enter upon medicine as a career. The factors which lead young people toward planning a career in medicine are many. But in the opinion of the subcommittee little if any weight should be given to such items as obedience to family insistence, desire to follow in father's or uncle's footsteps or because medicine is an easy way to secure both social and economic status and prestige.

3. *A balanced education. In regard to this qualifica*tion, Dean Faust of Stanford University, who has just resigned that post to become a member of the staff of the Ford Foundation, and who was a delegate at the Buck Hill Falls Conference, admirably expresses the thought of the subcommittee.

> In our judgment every premedical student should take work in the social sciences and the humanities, as well as in the natural and biological sciences. His study of man and society and of man's creative achievements in literature should be directed toward achieving a systematic knowledge of the principles of human behavior and a capacity for critical *understanding and appreciation of the products of men's* achievements in the arts, rather than to the accumulation of facts or the acquisition of information concerning the results of contemporary research and scholarship in the social sciences and humanities. What should be aimed at is the development of competence to form intelligent judgments, including judgments concerning values, with respect to particular problems by disciplined thinking in the light of relevant principles. Such judgments require competence to deal with the basic philosophic and historical questions. These objectives can be attained only if the student engages actively in the discussion and resolution of problems, including their fundamental philosophic and historical aspects.

4. Emotional stability. A person who goes into medicine should be stable and have the ability to appreciate the concerns, feelings, problems and joys of other people. He should have the capacity to deal with problems of human concern with a thoughtful and inquiring attitude. The medical profession does not want people who suffer from psychological inhibitions and who are bounded on the north, south, east and west by themselves.

5. Promise of growth. This involves capacity for independent study and ability to respond imaginatively and creatively to new problems as they arise. The medical profession wants those who have acquired the habits, as Professor Theodore M. Greene put it, "o flexibility and adaptability in a complex, path-finding venture." We want young men and women who have depth of intellectual interest and who have the powe to create, to analyze and synthesize, to organize and administer.

6. Academic fitness. We do not want "greasy grinds' or grade hunters but it is imperative that the candidate demonstrate beyond doubt his capacity to achieve excellence in his academic work.

7. Adaptability. Since man's nature and needs are complex and varied, medicine, as Professor Greene points out, will require the services of men and women who possess varied and complementary talents and who can adapt themselves to change when occasion arises

With these criteria in mind the subcommittee, through the chairman, director and associate director, set abou obtaining the facts as to the kind of educational experience and the kind of guidance, if any, premedical students were receiving in the colleges of the nation. It seemed to us that we could best obtain the facts by means of personal visitation. It was obvious that with the time and financial resources at our disposal it would be quite impossible to visit all the colleges of the country. We, therefore, resolved to make a nationwide sampling. All institutions preparing five or less premedical students a year were eliminated. With due consideration to location, we then selected approximately 100 liberal arts colleges: large and small, state and nonstate supported, university and nonuniversity related, church related, Negro and women's colleges.

To assist us further we prepared a 15 page mimeographed document in which we listed all of the items about which we should have as complete factual information as possible. Because of its length a detailed analysis of this document cannot be presented here. A sample of the items will, perhaps, suffice.

As to the educational program we endeavor to obtain as complete information as possible about courses and distribution requirements; whether they are specially devised courses for premedical students; a description of the major system or its equivalent; the departments in which premedical students major, and a list of the science, mathematics, psychology, social science, humanities and foreign language courses taken by premedical students. We also examine carefully the work in English composition. In connection with the major we endeavor to ascertain what influences the premedical student's choice and whether or not there is a comprehensive examination.

On the educational side, we want to know whether instruction is highly departmentalized and specialized or divisional and interdepartmental, whether by large classes or small discussion groups or a combination of both. We seek information about nonacademic education: To what extent do premedical students participate in extracurricular activities? What facilities, lectureships, assembly speakers, visitors to the campus does the institution make available to broaden the outlook of its students, and to what extent do premedical students take advantage of these opportunities?

We also concern ourselves with such items as character of the student body in the terms of the social, economic, intellectual and racial groups from which students are drawn; selection procedures; number of men and women; whether or not there is a quota on students proposing to study medicine, and general impressions of the student body. We look at the adequacy or inadequacy of the physical plant for classes, laboratories, dormitories, social rooms and athletics. We also record our general impressions regarding student attitude toward politics, studies, religion, money, and so forth; attitudes of members of the faculty, as well as their conception of their function as developers of young people, and administrative attitudes. We raise questions about discipline—social and academic, rigidity of program, snap courses, courses avoided by premedical students because they require too much work or because they are afraid that they will not get good grades in them.

Finally, on the educational side we ask ourselves on the basis of our survey of each institution visited whether it is certain, probable, possible, improbable or impossible that students will go from this institution to medical schools with adequate training in science, minds capable of independent thought, satisfactory attitudes toward other human beings, understanding of social forces, adequate cultural interests and high ethical standards.

As to the advisory system, the survey is principally concerned with how the premedical adviser fits into the educational picture, and only secondarily with how he functions in aiding the admissions officers to obtain the right people as medical students. Nor does this part of the survey emphasize technics used for evaluating student capacities, forms for making recommendations and the like. In a word, this part of our inventory is arranged under five categories:

1. The advisory system itself. Is there a premedical adviser or advisers, or a premedical committee; if so, from what department and how are they appointed? Is the adviser's teaching load lightened because of his advisory duties? Do advisers meet for exchange of ideas and, if so, how frequently? Does the college physician participate in premedical advising? Does each student have a personal adviser and is or may he be also the premedical adviser?

2. Relation of the college itself to the premedical program. Does the college take an interest in the premedical program and, if so, what is its motive—a come on for prospective students, an obligation to society, pride in the number of students it gets into medical schools or some other motive? Is there a premedical club or society? Are premedical students more or less a group apart? Is there unwholesome competition among premedical students or between premedical students and others? Do premedical advisers on the one hand, other faculty members on the other, feel that the premedical program interferes with a broad education? Are there other more or less defined preprofessional groups? Does the institution take steps to prevent overspecialization? Does the program taken by the average premedical student represent a fair example of a liberal education? Does the institution or the premedical adviser take pride in the records of its former students in medical schools and, if so, what steps are taken to find out about such records?

3. Areas of advising by the premedical adviser. Does he advise on "premedical" courses only or regarding the student's academic program as a whole? On what basis does he advise, for example, getting into medical school, students' interests, what is "good" for the students? To what extent does he advise regarding the student's extracurricular activities? To what extent does he advise regarding choice of medical schools to which to apply? Does he try to "tailor" the applications qualitatively or quantitatively or both? To what extent does he advise on such details as date of Medical College Admissions Test, cramming for this test, technic of personal interview, scholarships, which medical school successful candidates should accept and so forth? Does he feel that he serves as "father-confessor" for premedical students?

4. Relationship of the premedical adviser to students. We want as full information as possible concerning this. Consequently, we seek answers to such questions as: How well does the adviser know his students personally? Does he know their backgrounds? Does he invite students to his home? To what extent does he keep informed of the academic progress of his students in premedical and other courses? Does he follow their extracurricular interests and activities? How well does he know their relationships to the faculty and to other students? What insight, if any, does he obtain as to their motivation for medicine? How well does he know their state of health, emotional stability and financial status? What devices does he use to obtain such information? What is his attitude toward getting his students into medical school—to get in as many as possible, to get in only the best, to keep out the risks? In recommending students does he consider the best interests of the medical profession and society as a whole? Does he try to dissuade weak students and how early? What evidence does he have to go on and what arguments does he use? Does he or the college officially deny to weak students the right to apply to medical schools or to take the Medical College Admissions Test? Does he discourage the weak ones, without definitely forbidding, or does he let all who want to, go ahead? Does the premedical adviser accept any responsibility for advising next steps for students who are not admitted to medical school? Does he try to prepare weak students psychologically for the possibility of not being admitted? Does he try to interest good students in medicine and does he think he should or should not?

5. Relationship of the premedical adviser to the medical schools. As we want all the information obtainable, we ask first of all, how much does he know about various medical schools? Has he visited many? Is he acquainted with their admissions officers? Has he studied their catalogs? What is his attitude toward letters of recommendation? Does he think that an honest criticism of a student will result in that student's rejection by the medical school? What relationship is maintained between the adviser's letters and other letters? Does the adviser obtain information from medical schools about his former students? How does he obtain such information and is it of any use?

The method of procedure employed by the director and the associate director of the preprofessional survey is very simple. After receiving the approval of the Subcommittee of the institutions to be visited we divided them between us. Inasmuch as Professor Cadbury, the associate director, was able to give more time to this part of the work, approximately 65 institutions were assigned to him; four we agreed should be visited jointly by both the director and associate director; the remainder, about 40 in number, were assigned to the director. To date 66 have been visited by either the director or associate director and two—Union and Wake Forest, jointly by the director and associate director.

The time spent at each institution varies from three to five days. At each institution we talk with administrators, premedical advisers and other faculty members. In this connection we always make it our business to distribute our time as evenly as we can to those associated with the three basic disciplines. We also visit classes, talk with students and admissions officers and inspect student programs. Occasionally a president or a dean invites us to a luncheon or dinner attended by representative members of the staff, and on these occasions we talk shop. We always record our findings at the end of the day and privately. Always too we stress that we are not evaluating the institution as such but are engaged in an objective study in which we seek the help of the institution. Without exception we have been cordially received although the degree of cordiality has varied somewhat.

Although our visitations are not yet completed, we feel that on some items we have sufficient data to warrant certain generalizations. In any event we are in a position to report on pertinent observations we have made. The following observations are subject to change on the basis of what we find at the institutions yet to be visited.

1. Lack of institutional objective. We place this at the head of the list for even in those institutions in which the objective or objectives are defined, the objective or objectives are lost sight of. In this connection there is frequently no relation between courses offered and the objective of the institution.

2. Departmentalization and overspecialization. Most, if not all, of the colleges suffer from this. Unfortunately, during the past hundred years liberal education in this country has suffered from these ills. Our liberal arts colleges, as our survey clearly indicates, have become a collection of departments with little organic connection between them. Seeking to understand society, the student is confronted with a plethora of specialized courses, departmentally organized and ofttimes not related to each other on more than a departmental basis. Man and society disappear from the student vision as men and specialties crowd them out. And because of the enthusiasm of each instructor, himself usually a specialist, for his particular course and his certainty that the student requires the discipline of his specialty, the student's general understanding of society as a whole is not greatly advanced. The situation as a whole is, as my colleague, Ordway Tead, puts it, intellectual fragmentation, befuddlement, philosophical anarchy and spiritual blindness.

3. Lack of balanced education. Especially is this true of those going forward to medicine. Only in a small minority of the institutions thus far visited is the premedical student obtaining a balanced education. As far as we can discern, three or four reasons are outstanding: In the first place we discovered that several institutions apparently had never given thought to the importance of the prospective doctor's becoming acquainted with the arts, letters and music or fitting himself to meet the responsibilities of the citizen as a member of society. Secondly, we discovered that most premedical advisers were recruited from the departments of biology and chemistry and in many instances are convinced either that, though a balanced education is desirable, there is no time for it, or that they themselves regard the humanities and the social sciences as a waste of time.

Another argument advanced by those giving instruction in science is that medical college admissions committees want the student to have advanced elective work in either biology or chemistry or both in order to enable the admissions authorities to evaluate the student's capacity for advanced scholarship. Both faculty and students point to the college announcements with their lists of required, strongly recommended and recommended lists of science courses. In almost every institution visited the students tell us that they would like to broaden their formal education but, in face of the competition for admission to medical school, do not dare omit the strongly recommended and even the recommended courses. Finally, in this connection, we have frequently run into the argument that many students who want to go into medicine fail to be admitted to medical school and must, therefore, adjust to an alternative career which requires a solid foundation in science including mathematics.

4. Poor or mediocre instruction. We have witnessed excellent instruction. But this has been outbalanced by indescribably poor or, at best, mediocre instruction. In many institutions visited we witnessed performances which were worse than dull and routine. In many cases we were impressed with the aimlessness of performance. The only aim we could discover was to fill the interval between bell and bell with another segment of subject matter which the student should and could acquire for himself. In the wake of this purposeless procedure come habits of mind and of work decidedly deleterious to both student and teacher. Some institutions could well be labeled "textbook colleges."

5. Lack of facility of communication. We find considerable evidence to the effect that students lack ability to read rapidly and with comprehension. They are wanting in skill in logical and clear expression both in writing and in speech.

6. Too much lecture and too little active participation of the student in the learning process; too little independent inquiry and responsible judgment. In this connection may I cite a statement made at the Buck Hill Falls Conference by Professor Arragon of Reed College.

> The aims of education are not to be attained simply by the provision and prescription of courses and content. They depend upon the active participation of the student in the learning process and this is not to be imitation and repetition in the classroom and laboratory but by practice in responsible inquiry and judgment. Means to this may include group discussion, the use of primary sources as well as secondary commentaries, individual writing, oral reports and other projects, experimental problem solving in laboratories. A similar contribution is to be made by student responsibility for student government, student handling of extracurricular activities, participation in intramural sports, dramatics and the like. In and out of the classroom the intellectual and social vigor of students is encouraged by thinking and acting in collaboration with fellow-students and teachers.

Of this kind of instruction we have, to date, found too little.

7. Poor premedical guidance. We are far from happy with the guidance premedical students are receiving. Much of it does not go beyond approving course schedules. In one or two institutions there is none at all. Too many advisers are not concerned with the matter of values. When the final report of the subcommittee is written we shall spell out in considerable detail our findings on this item.

There is much more that might be said, however. I trust I have said enough to give you a picture of how this part of the overall survey is progressing and a bit of what may be expected in the final report of the subcommittee once the field work is completed.

COCCIDIOIDOMYCOSIS IN CHILDREN

Chester I. Mead, M.D., Bakersfield, Calif.

Coccidioidomycosis is a disease which only recently has become important as a diagnostic problem in children in certain sections of the country. The disease was first recognized in Kern County, Calif., in 1901 in its granulomatous form.

For many years a disease entity existed in the Central Valley of California, characterized by fever, cough, malaise and erythema nodosum. In 1935 Dr. Myrnie Gifford[1] of the Health Department of Kern County first recognized that the disease entity was due to the fungus Coccidioides immitis. Soon after this Dr. Charles Smith[2] of the Department of Health of Stanford University and now head of the School of Public Health at the University of California, in collaboration with the physicians of Kern and Tulare counties,[3] did a great amount of research on the so-called "valley fever," piecing together the fragmentary knowledge of this disease. He developed new tests, which have greatly aided in early and accurate diagnosis and prognosis.

The disease is now known to be due to a fungus, C. immitis, which has been recovered from the soil in various parts of the San Joaquin Valley of California and Arizona. The fungus has also been recovered from the sputum of persons who have the disease and from involved tissue. This disease is also endemic in some of the drier and semiarid regions of Texas, Nevada, Arizona and New Mexico, as well as other areas of California. This wide distribution makes it imperative that the infection be taken into consideration in differential diagnosis in most of the southwestern states.

Since the fungus is present in the soil in these dry areas, the incidence of the disease reaches its peak in summer months when the soil is drier, wind velocities are greater and dust is more prevalent.[4] In children the incidence is even higher during summer vacations, since more frequently they are out of doors playing in the dust or as older children working in the fields.

TESTS FOR COCCIDIOIDOMYCOSIS

A study was made by Gifford[5] of preschool and school age children in Kern County to determine coccidioidin sensitivity. She found positive skin reactions in over half of 2,718 children tested. The percentage increased progressively from 17 per cent among children who had lived in Kern County less than one year to 77 per cent among those who had lived in this area 10 or more years. It is known that three fifths of the infections are asymptomatic.[6] Symptoms that do develop during primary respiratory infection vary in frequency and severity. The presenting symptoms in children are cough, fever, general malaise and night sweats. Our experience has shown that pleural pain is common in the preteen age group. After seven to 10 days of these symptoms, the child may slowly improve, or in 5 to 10 per cent either erythema nodosum or erythema multiforme will develop. The symptoms are no different in children than in adults, but the diagnostic problem in the former becomes greater because of the similarity of these symptoms to those due

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Read before the Section on Pediatrics at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

[1] Gifford, M. A.: Annual Report of the Kern County (Calif.) Health Department for the Fiscal Year, July 1, 1935 to June 30, 1936. Gifford, M. A.; Buss, W. C., and Douds, R. J.: Annual Report of the Kern County Health Department for the Fiscal Year, July 1, 1936 to June 30, 1937.

[2] Smith, C. E.: Coccidioidomycosis, M. Clin. North America **27**: 790 (May) 1943.

[3] Smith, C. E.: An Epidemiological Study of Acute Coccidioidomycosis with Erythema Nodosum, in Proceedings of Sixth Congress of the Pacific Science Association, Held at Berkeley, Stanford University and San Francisco, Berkeley, Calif., University of California Press, 1939, vol. 5.

[4] Smith, C. E.; Beard, R. R.; Rosenberger, H. G., and Whiting, E. G.: Effect of Season and Dust Control on Coccidioidomycosis, J. A. M. A. **132**: 833 (Dec. 7) 1946.

[5] Gifford, M. A.: Coccidioidomycosis in Kern County, California, *in* Proceedings of Sixth Congress of Pacific Science Association, *Held at* Berkeley, Stanford University and San Francisco, Berkeley, Calif., University of California Press, 1939, vol. 5.

[6] Smith, C. E.; Beard, R. R.; Whiting, E. G., and Rosenberger, H. G.: Varieties of Coccidioidal Infection in Relation to the Epidemiology and Control of the Diseases, Am. J. Pub. Health **36**: 1394 (Dec.) 1946.

to upper respiratory infections and especially viral infections, influenza or atypical pneumonia so common in childhood.

A careful history may reveal a possible exposure to the fungus 10 to 18 days prior to onset of symptoms. Children may become exposed by working in the fields, by being in an endemic area during a dust storm or merely by driving through such an endemic area. The history will show more aching, night sweats and malaise than would be expected from the usual upper respiratory infection at that season of the year. Indeed, persistent temperatures of 100 to 103 F. are common.

Examination of such children usually fails to add many positive findings. There may be a few scattered coarse rales in the chest in the early stages. The absence of coryza, red throat or otitis media should make one additionally suspicious of the disease.

Skin testing with coccidioidin in long time residents of the area is of little value unless there has been a conversion in reaction from negative to positive. The conversion occurs during the second or third week of infection. The skin test in such patients is used chiefly as a screen. Smith [7] showed that 17 per cent of the reactions are negative in the first week in nondisseminated coccidioidomycosis, 7 per cent in the second week, 1 per cent in the third week and none in the fourth. In patients recently arrived or only transitory in an endemic area a positive reaction in the coccidioidin test is very important.

Precipitation tests give positive results in the primary infections in 50 per cent in the first week and 90 per cent within two weeks. Loss of precipitins begins in the third week.

Complement fixation tests are helpful later since antibodies are slow in development. Eight per cent of the reactions are positive in the first week. Conversion from negative to positive continues for three months. Persistence beyond six months is unusual, except in disseminating disease. Three or four months after a suspicious lesion, the only hope of diagnosis is the complement fixation test. The latter test is especially reliable prognostically, and a progressive rise in titer occurs in most patients with disseminated infection.

The final results of these tests, their technique and meaning have been published.[7b] Materials for these tests were made available by the Cutter Laboratories. Coccidioidin for skin tests is now available commercially.

Sputum examination in children is unsatisfactory because sputum usually is scanty in coccidioidomycosis and especially difficult to obtain in children. Furthermore, identification of the coccidioidal endosporous spherules in cover slip preparations of sputum is unreliable, while culture of Coccidioides is hazardous because of the frequency of laboratory infections.

COMPLICATIONS

Dissemination of the disease rarely occurs in children, but when it does, it is serious. These granulomatous extrapulmonary lesions may be seen in skin, bones, lymph nodes, peritoneum or meninges with resulting meningitis. Meningitis due to this fungus has been almost 100 per cent fatal both in children and in adults. Some recent work has been done by Dr. Robert Cohen [8] at the Kern General Hospital on a new drug, acti-dione[8] (antibiotic from Streptomyces griseus), in the treatment of coccidioidal meningitis. This drug is an antibiotic fungistatic agent which has some beneficial effect.

In a study made on adult white men,[6] one in 100 of those clinically diagnosed underwent dissemination. The rates are about 10 times as great in the colored race.

A recent study has been made by Drs. Vaughan and Rameriz [9] of Kern County on coccidioidomycosis as a complication of pregnancy. Their findings were that coccidioidomycosis can be serious to the mother, especially during the last trimester of pregnancy, but to the infant only as a cause of premature labor. In their series no infant was born deformed even though the infection had occurred during the first trimester of pregnancy. There was some passive transfer of humeral antibodies to the infant from the mother's blood, which disappeared in a few weeks. Results of skin tests on the infants born of mothers with positive reactions were all negative. In one mother dying of disseminated coccidioidomycosis the placenta was infected but not the infant. This would suggest that the disease may follow the pattern of tuberculosis with respect to congenital transfer; however, at the time of this publication no cases have been reported.

Another complication of coccidioidal infection is coccidioidal cavitation, which occurs rarely in children.

Age plays a very small part in coccidioidal infection except that the disease is more prevalent at an age when children are out of doors. In the youngest infant to come under my observation a coccidioidal dactylitis developed at 2 weeks of age. There have been several in the second year of life, some of these with erythema nodosum or erythema multiforme.

PROGNOSIS AND TREATMENT

The prognosis is excellent in all except the disseminated form. The sensitivity to coccidioidin is important as a prognostic sign in the disseminated form. If sensitivity is maintained, the outlook is more favorable. Three fourths of those who continue to react to coccidioidin diluted 1:100 will survive, while only one sixth of those with negative reaction to that dosage will survive. Treatment is chiefly that of rest during the initial infection to prevent dissemination.

SUMMARY AND CONCLUSIONS

The disease coccidioidomycosis is a distinct problem in pediatrics in southwestern United States, especially during vacation periods from school when travel is more general. No one responsible for the care of sick children can disregard the disease. As the children grow to adulthood, coccidioidomycosis in endemic areas becomes less of a problem because in a large part of the population immunity develops. Once a child has had the disease and recovered, an immunity has been established and reinfections do not occur.

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7. (*a*) Smith, C. E.; Whiting, E. G.; Baker, E. E.; Rosenberger, H. G.; Beard, R. R., and Saito, M. T.: The Use of Coccidioidin, Am. Rev. Tuberc. **57**: 330 (April) 1948. (*b*) Smith, C. E.; Saito, M. T.; Beard, R. R.; Kepp, R. M.; Clark, R. W., and Eddie, B. U.: Serological Tests in the Diagnosis and Prognosis of Coccidioidomycosis, Am J. Hyg. **52**: 1 (July) 1950.

8. Cohen, R.: Coccidioidal Meningitis, read before the Section on General Medicine at the Seventh-Ninth Annual Session of the California Medical Association, Balboa Park, San Diego, Calif., April 29-May 3, 1950.

9. Vaughan, J. E., and Rameriz, H.: Coccidioidomycosis as a Complication of Pregnancy, read before the Section on Obstetrics and Gynecology at the Seventh-Ninth Annual Session of the California Medical Association, Balboa Park, San Diego, California, April 29-May 3, 1950.

Recent work seems to indicate that maternal infections in the first trimester do not cause anomalies in the infant, while infections in the last trimester are a greater hazard to the mother and more often result in premature birth of the infant.

The infection in the colored race carries greater hazard of dissemination than in the white race.

If infection has occurred, it is of no value to move from the endemic area; rest alone is the best treatment. The temperature chart and sedimentation rate will give the best clue as to when the disease becomes arrested.

1930 Truxtun Avenue.

ABSTRACT OF DISCUSSION

Dr. Charles E. Smith, San Francisco: Dr. Mead typifies the alert practicing physician whose scientific interest matches his desire to aid his patient. My own studies in this field have been possible only as collaborative investigations with Dr. Mead and his associates. When one recalls that in endemic areas 10 to over 25 per cent of susceptible persons acquire coccidioidal infections each year, it is evident that within 10 years most inhabitants are infected. Thus in a stable population coccidioidomycosis would be almost exclusively a pediatric problem. In our own unstable peregrinating population it is even a geriatric problem. However, all pediatricians can heed Dr. Mead's paper as focusing attention on this infection, which must be considered in differential diagnosis. Rosenthal has raised the question of contagion in coccidioidomycosis. While all agree that the spherules of Coccidioides found in man and animals are infectious, contagion is another matter. My own experience has never provided proof of contagion. I wonder what Dr. Mead's experience has been, and I should like to know if he isolates his coccidioidal patients.

Dr. Chester I. Mead, Bakersfield, Calif.: I believe that so far there is no evidence of contagion. In my own experience or in that of my colleagues in the Valley, there has been no evidence of infection from person to person. I had two children in one family in whom coccidioidomycosis developed with onset three days apart. With the present knowledge of incubation, these were probably exposures from the same dust storm. I do not isolate my patients with Coccidioides but rather encourage them to follow the same precautions they would for any upper respiratory infection. The small number of active cases of Coccidioides diagnosed compared to the number of cases with positive reactions in skin tests indicates that many active cases or mild infections are missed. Skin tests in children or in adults new in the endemic area are of much more value than in adults who are not recent arrivals in the area.

PSYCHIATRY AND MOBILIZATION

John D. Campbell, M.D., Atlanta, Ga.

During World War II the psychiatrist was in intimate contact with the manpower problem, from the beginning of induction on Jan. 1, 1941, to the time of demobilization. There were many errors made, and lessons learned, during this five year period which should not be overlooked during the current mobilization. In case of another world conflict, there are several reasons to feel that the manpower problem will be even more formidable than before: The fighting forces will be spread wider; the war will probably last longer, and the fact that the population of the United States is only 150,000,000 in comparison with Russia's 200,000,000, not counting her satellite nations. It is axiomatic, therefore, that we must utilize every individual to his fullest capacity, whether he is a cotton picker, taxi driver, scientist, aviator or soldier. All our knowledge regarding human psychology must be used, not only in selecting and assigning personnel but also in preventing psychiatric casualties, which in World War II exceeded all other causes for rejection and disability.

I humbly acknowledge that my experience includes only the psychiatric facet of this huge problem and that my statements are strictly constructive and not intended as criticism of any individual or group.

PROPER RECORDS AT THE INDUCTION STATION

The physical and mental examinations carried out at the induction stations, although brief, constitute one of the most comprehensive studies of man power ever undertaken. Except for the classification, there were no records kept of these examinations during World War II. Each individual, whether accepted or rejected, should have a permanent record, showing his physical and mental assets and defects, recommendations made by local draft boards and suggestions submitted by the medical officers and psychiatrists at the induction station. If the next war proves to be as long and difficult as we now suspect, universal conscription of all man power, military and civilian, will probably ensue. In that case, psychiatric screening of civilian workers may be considered advantageous for purposes of greater efficiency, security and prevention of absenteeism and frequent job changes. Furthermore, whether in military or in civilian establishments, it is a great advantage to have a longitudinal record on each individual. For instance, the impression of the induction station psychiatrist that a certain youth is a psychopathic personality, too young for a definite diagnosis, may be of great assistance a few months or years later if he begins to manifest asocial behavior. A cross section approach gives the advantage to the malingerer or psychopath who is selfishly attempting to evade responsibility. Likewise, if the medical officer felt that a certain man, with mild neurosis for instance, should be considered for limited duty, this suggestion could be valuable later, whether the man became a soldier or a defense worker. Induction station examinations are too expensive, time consuming and significant not to be recorded for future reference.

The subject of psychiatry and mobilization will now be discussed under the heads of the various psychiatric problems which present themselves in a military setting. Since each category poses different problems, these can best be pointed out by discussing each group separately.

MENTAL DEFICIENCY

Both Army and Navy regulations state that examinees with an intelligence quotient of 75 or below should not be inducted. In view of the highly technical nature of modern warfare, plus the large number of disciplinary infractions among constitutional inadequates, with intelligence quotients between 80 and 85, I recommend that the minimal intellectual quotient for induction be raised to 85. In a recent newspaper column by Marquis Childs, it was reported that a large percentage of our soldiers now in Germany are illiterate and incapable of acquiring much technical training. Furthermore, as pointed out by this columnist, in the modern warfare of ideologies, it is important that our service men understand and be capable of teaching the significance of democracy wherever they go.

Recruiting officers, often overimpressed by the muscularity of the moron and the fact that he "looks" normal, proceed to induct him into the service. Many morons do not look the part, while many persons with normal intelligence quotients "look" stupid. A significant, and often diagnostic, question to ask the mental defective is how often he visits the nearest large city to his home. In many instances, the moron will answer that he has never been to the city and that he visits the countyseat only on rare occasions. Such a lack of curiosity and a desire for quiet routine is to be found rarely in any other personality than the mental defective. It is a notable fact that the mental defective often makes an excellent worker in a routine occupation, such as dairy work or farm labor, and that changes in occupations or locale are often destructive to his personality integration. I have observed mental defectives succumb to a psychosis simply as the result of the trip to the city and induction station for examination. The removal of the moron from the farm or factory, where he may be working satisfactorily, is all that is necessary in some cases to produce an emotional reaction that may require months or years to rectify. Prevention of emotional disorders is important, and it should be remembered that rehabilitation really begins on the day of examination or induction and not at the time of separation.

PSYCHOPATHIC PERSONALITY

There are several basic errors in the manner of handling the psychopathic personality, the chief of these being that the existence of such a personality type is not generally recognized and appreciated by those in authority. It is imperative that commanding officers, chaplains, medical officers in general, legal officers, personnel officers, and others who deal with personnel problems, be cognizant of and convinced of the importance of this personality type. For a detailed description of the psychopathic personality the reader may select one or more of the papers or monographs in the literature,[1] but here we might review the salient features of the psychopath as he presents himself in a military organization. The typical psychopath quit school in the seventh or eighth grade because he "got fed up with the routine"; he wandered about for several years, not adjusting himself to any one job for more than three or four months; in civilian life he usually preferred seasonal or shady occupations, such as bootlegging, smuggling whisky into dry states, dealing cards in a gambling club, or traveling with a carnival; he was arrested several times before reaching the age of maturity but showed a remarkable talent at avoiding serious prosecution; more noticeable than all of these was his immature and irresponsible attitude toward the important issues of life. He had usually been married once or twice but deserted his wife as flippantly as he deserted the military service.

Although he frequently enlists because he is usually in search of change and excitement, the psychopath is never in the service long before the restrictions of military life begin to stimulate his impulsive behavior, rebellious attitude, restless disposition and irresponsible reactions. He is drunk and disorderly, A. W. O. L., fights, curses an officer, steals a car or commits some other relatively minor but troublesome offense. A trial is ordered by the commanding officer; several officers leave their regular duties to serve on the court; arguments and careful consideration of facts ensue; a sentence is finally decided upon, and considerable expert stenographic talent is expended in putting the papers into proper order for the scrutiny and approval of the commanding officer. The man receives a warning, 30 days in the guardhouse, perhaps every third day on bread and water and/or a fine to be deducted from his pay, provided that previous fines are not already being deducted to the legal limit. All this time the psychopath is deriving a vicarious pleasure from the attention he is getting and the trouble he is causing. Such is this inadequate individual's way of obtaining satisfaction; even the sentence affords him some provocation for resentments and future infractions of the rules. It is just here, if not much sooner, that one should realize that the psychopathic personality is different from other people. Punishment is not punishment to him. One of his chief characteristics is his failure to profit from experience. Once he is safely secured in the brig or guardhouse, is the the case of the psychopathic personality closed? Even in the guardhouse he starts a fight, cuts his wrists in a gesture of suicide in order to reach the hospital or agitates other men to escape or rebel. The behavior of various psychopaths follows this general pattern so closely that we are obliged to accept a biologic anomaly as the only explanation.

Even if he avoids serious prosecution, the psychopath is continually causing trouble. Many of his minor infractions are dismissed or overlooked by a naive or sympathetic officer. In some instances, the psychopath manages to implicate an innocent mental defective or someone less shrewd than himself. All the time, however, he is talking in a boastful but affable manner. He has been mistreated, misunderstood, pushed around, discriminated against, separated from his loved ones [*sic*], not given a chance to show what he can do, etc. And he is such a good actor that he usually finds a judge, a doctor or minister who is willing to give him one more chance. Unfortunately, this "one more chance" in the military service consists in continuing the despicable custom of transferring the unwanted to another station where the psychopath may start in again with his unorthodox behavior. There are still many persons, even some psychiatrists, who feel the psychopath should serve, but most such persons readily admit that this impression is influenced by their personal feelings. An interesting sidelight on this situation is that in 1945, according to newspaper reports at the time, there were 50,000 American service men A. W. O. L. in France. It is very doubtful, also, that these people made very good diplomats of good will scattered over Europe.

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[1] (*a*) Henderson, D. K.: Psychopathic States, New York, W. W. Norton & Company, Inc., 1939. (*b*) Dunn, W. H.: The Psychopath in the Armed Forces: Review of Literature and Comments, Psychiatry 4:251, 1941. (*c*) Campbell, J. D.: Psychiatry and Military Service, Kentucky M. J. 39:110, 1941. (*d*) Cleckley, H. M.: The Mask of Sanity, ed. 2, St. Louis, C. V. Mosby Company, 1950. (*e*) Partridge, G. E.: Psychopathic Personalities Among Boys in a Training School for Delinquents, Am. J. Psychiat. 8:159 (July) 1928. (Copied from Cleckley: Mask of Sanity, p. 196.). (*f*) Campbell, J. D.: Everyday Psychiatry, ed. 2, J. B. Lippincott Company, 1949.

This final statement should be added regarding the psychopathic personality [1f]:

> The significant point in the psychopath's impairment in conscience is the constitutional nature of this defect. Once this diagnosis is made, it is the same as saying: "This individual is not capable of realizing the seriousness of his acts; he is lacking in the faculty necessary to acquire moral standards; he is unable to feel the seriousness of his mistakes and incapable of remorse." The average citizen or physician continues to hope the psychopath will mend his ways, will come to realize the folly of his acts. These false expectations are built upon the idea that the psychopath possesses a normal conscience and that he has the faculty of acquiring moral standards. A psychopath could no more feel actual remorse or improve his reactions by experience than a mental defective could learn cube root or a neurotic forget his symptoms. The psychopath's career is so punctuated with adjustment and maladjustment and repetition of the same mistakes that we are forced to regard it as the fate of nature, rather than the result of wilful meanness. D. K. Henderson expresses the thought well: "Most psychiatrists, many prison officials, and some judges are beginning to appreciate that those who are so afflicted are distinctive types, emotionally and instinctively unstable, who have no more power to control their conduct than the epileptic his fit or the malarial patient his ague." The psychiatrist maintains this belief with no thought of excusing the psychopath, but rather with the idea of stating the facts.

It is a conservative estimate that 75 per cent of the disciplinary infractions in the service necessitating trials are committed by repeaters who are psychopathic personalities. In an effort to give fair consideration to the average service man, who is a rare offender, we give special consideration to the psychopath, to the extent of defeating the purpose of democratic principles. Long trials, fines, lectures, prayers, patriotic speeches and guardhouse sentences not only do no good so far as the psychopath is concerned but actually constitute a mockery of or burlesque upon justice. These are practical biologic facts, learned by long years of experience with the psychopathic personality, in the service and out, and explain the psychiatrist's recommendations regarding the psychopath in the military service.

Although every effort should be made to keep the psychopath out of the service, it is inevitable that considerable numbers of them will be inducted. The local draft boards are often eager to rid the community of obnoxious characters. It is frequently difficult, in the brief examination at the induction station, to distinguish the normal spirit of youth from the rebelliousness of the psychopath, especially in immature subjects. It is important, therefore, that authorities within the service be alert to this personality type and adopt quick, consistent and effective methods of disposition. When a man (or woman) breaks the rules several times or proves by his attitude that he is of a recalcitrant type, immediate psychiatric consultation should be obtained. Previous notes on his record, beginning at the induction station, may already indicate the impulsive, immature and inadequate make-up of the individual. Personal bias, a feeling of revenge or a desire to punish should not stand in the way of the proper, immediate disposition of the psychopath. As soon as the diagnosis is made, regardless of pending courts and trials for minor offenses, the man should be separated from the service as inapt or undesirable. Medical discharge should be avoided because it entitles the person to the usual benefits and privileges of a veteran, but even this would be preferable to retaining the misfit in the military service. It might be argued that the psychopath should not be turned loose on an unsuspecting public, but it is here submitted that civilian authorities have had many, many years to do something toward controlling the psychopath but continue to deny the existence of such a problem. It should be repeated that the psychopath adjusts more easily to civilian life, where his activities need not be so circumscribed.

In the discussion of this category a note might be appended on the subject of malingering. Many persons, including psychiatrists, were surprised during World War II at the scarcity of malingerers. Of course, behind most efforts to malinger the psychiatrist recognized definite signs of psychopathology which, in itself, disqualified the man from service. However, I feel that the problem of malingering in relatively normal persons may be more troublesome in the current mobilization. Many of those who served previously feel they have a conscientious, justifiable reason to avoid military service this time if possible. Furthermore, there are many persons, especially among the college group, who are not truly communists but whose patriotic resolutions have been greatly weakened by such ideologies. While the present paper cannot include a complete discussion of methods of recognizing subversive elements, I feel that this is by nature one of the psychiatrist's responsibilities and that someone with experience along this line should write a thesis on the subject.

PSYCHONEUROSIS

Our attitude regarding psychoneurosis could easily be made more flexible and practical. Psychoneurosis is a relative condition, latent in some persons, conspicuous in others. A tremendous amount of the work of civilian life is carried on by latent, as well as active, psychoneurotics. If we rigidly reject all psychoneurotics from military service, a great deal of valuable man power would be lost. On the other hand, the indiscriminate enlistment of individuals with psychoneurosis would be ill advised and expensive. The psychoneurotic, like the artist or the musician, is a valuable individual, but we must take into consideration his sensitive nature. Each person with psychoneurosis should be studied for his particular capacities, interests and aptitude. It is strongly urged that the medical officer be allowed more freedom in recommending special duty for the various personality types. Some excellent men, although psychoneurotic, could serve satisfactorily within the continental limits of the United States. Others would make useful servicemen as long as they can continue at the occupation in which they are proficient. Age, marital adjustment and habits of life are factors to be considered. Long-established conditioned reflexes cannot be broken suddenly without producing physiologic disturbances in these tense, nervous individuals. Furthermore, the earlier such conditions are recognized, the sooner prophylactic steps can be taken to prevent the development of a clinical state of anxiety. While the psychiatrist does not believe in coddling, he feels that we could be much more realistic by relaxing the regulations in regard to the persons with latent and with milder psychoneuroses. Those with severer disturbances should remain in the quiet, protected, routine environment of civilian life.

It might be wise to educate even our lay personnel of the nature and significance of psychoneurosis. Unfortunately, the word "psycho" became a term of derision during the last war, indicating that a stigma had been placed upon the individual receiving such a diagnosis. Since in anyone clinical degrees of anxiety and nervous tension may develop, lay personnel should be taught that psychoneurosis is merely a state of fatigue and nervous exhaustion. Just as fighting men in the last war were taught that fear is a normal reaction, all personnel should learn that every nervous system has its breaking point. This wholesome attitude would encourage the nervous and fatigued person to seek medical attention early, before a serious break occurs. I recall two dozen or more psychoneurotic men, observed during World War II, who shot themselves in the foot to avoid a duty for which they did not feel capable.[2] Suicide also was resorted to by some because they had been led to believe that to be "psycho" was to be called a coward. It would be well for all of us to realize that every person does the best he can with the personality integration with which he has to function.

A more careful rotation of personnel would also help to prevent the occurrence of psychoneurosis. Many men during the last war were not sent overseas, although they were capable of overseas service, while some of those who did go to sea or served on foreign soil were held there for two or three years. I observed pitiful cases of combat fatigue, operational fatigue and psychoneurosis at Pearl Harbor toward the end of the war. On some ships the entire complement, from the officers down, were suffering with fatigue, anxiety and nervousness. Such a situation is wasteful of man power, inefficient and dangerous. On the other hand, psychoneurosis may be encouraged by allowing men to remain idle or forcing them to work in a trade or profession for which they are not trained. Medical officers were well acquainted with the "damp rot" and frustration which developed among officers left too long in a "pool" or assigned to a duty inferior to their experience and training. Psychoneurosis is to a great extent a preventable condition, and frustration, suspense, fatigue or a feeling of uselessness certainly predisposes to its development.

A good illustration of sheer disregard for biologic principles was observed in the last war when men were chosen almost indiscriminately for assignment to radio and radar schools. In order to learn radio or radar, which are highly abstract subjects, a man should have an intelligence quotient of at least 100. Every military psychiatrist remembers the syndrome which developed in those men who were not intellectually or emotionally suitable for this work: headaches, tinnitus, dizziness, fatigue, anxiety, mild depression and insomnia. Instructors and commanding officers should not wait until a man is "washed-out" or has reached the limit of his nervous endurance before it is recognized that he has been inappropriately assigned. More scientific and more flexible assignment should become a part of the military organizations. The custom begun in the last war of teaching some of the rudiments of psychiatry to personnel officers should be given further development. The more psychoneurosis we prevent, the more efficient our man power will be and the fewer veterans we shall have on our pension lists after the war.

Sometimes psychoneurosis is developed and encouraged within the military hospital itself, under the very eyes of those who should be the first to detect it. Persons on the sick list for 30 days or longer should routinely have a psychiatric consultation, not only for diagnostic purposes but also for psychotherapeutic suggestions and disposition of the case with a minimum of trauma to the personality. Take the case, for instance, of a man who had been in a medical ward of a military hospital for three months with a diagnosis of arthritis. The sedimentation rate was normal, but the patient did run a low grade fever, a symptom not infrequently present in anxiety neurosis or in a depressive reaction. Examination of this patient's health record showed that 12 months previously a diagnosis of rheumatism had been made in another military hospital. During the succeeding 12 months the man had been on duty less than one month altogether, having been admitted and discharged from several military hospitals, each medical officer apparently accepting the original diagnosis of rheumatism without question. A psychiatric examination revealed the patient to have typical symptoms of manic-depressive disease, depressed type, while the internist readily admitted there was insufficient evidence to continue the "arthritis" diagnosis. Here is a man who was not only ineffective but also a burden; with proper diagnosis and treatment earlier he could have been returned shortly to his civilian work in a textile plant.

Another problem in the military hospital is the inadvertent use of surgery on psychoneurotic, inadequate and psychopathic individuals. Pain in the right lower abdominal quadrant, for instance, was too often interpreted during World War II as appendicitis. The surgeon often rationalized: "Well, it won't hurt to get the appendix out anyway—the man may be at sea when he has his next attack." Even after removal of the allegedly inflamed appendix, however, and the return of the man to duty, the surgeon discovers the patient again in his ward within a few days, now complaining of pain in the normally healed scar. Like the patients receiving unnecessarily drawn-out medical care, these surgical patients were far from rare. Men with low back pain were illogically subjected to kidney suspension operations, which only enhanced the dependence of these inadequate persons upon the medical men, leading eventually to more surgical or medical treatment and discharge. These ill-advised surgical procedures became such a problem in some military hospitals during the last war that commanding officers sent out directives stating that no operations were to be performed prior to a psychiatric consultation. This rule is particularly indicated in detention wards, where there are many persons of this type seeking more attention and justification for not going to duty. The time to recognize these psychoneurotic and constitutionally inadequate persons, who are converting their anxiety into somatic ills, is early, before surgical procedures or long hospitalization allows the fixation to develop. If every medical officer in the service had a brief indoctrination on a psychiatric ward, it would be of inestimable value to him professionally as well as to the government.

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[2] Clark, H. E., and Campbell, J. D.: Self-Inflicted Gun-Shot Wounds —Surgical and Psychiatric Considerations, Am. J. Psychiat. 104:565 No. 8 (Feb.) 1948.

To sum up, the psychiatrist feels that it is wise to recognize and record the presence of a latent or active psychoneurosis at the induction station if possible; that the assignment of such persons should be more scientifically directed, and that medical officers generally should be alert to the possibilities of psychoneurosis, its prevention and its proper disposition. The psychiatrist must also realize that his discipline is not infallible, and he must always be eager to work with the medical officer, commanding officer or personnel officer, in order to increase the usefulness of these valuable, if nervous, individuals.

HOMOSEXUALS IN MILITARY SERVICE

At the present time, sodomy or homosexuality in the service is considered a major offense, possibly drawing a sentence of five to 10 years. During the last war homosexuals, when apprehended, were given an opportunity to "resign for the good of the service," in order to avoid prosecution, which also entailed personal disgrace. This is an enlightened view in comparison with that of the "old days," but we are still not practical, biological or humane in our attitude on this subject.

What are the facts [3] about homosexuality? Is it a moral or a medical problem? According to most authorities, homosexuality is a relative biologic condition, based upon glandular dyscrasia, which may be compared with any other inherent anomaly, such as Froelich's syndrome or cretinism. Before we take a superior attitude toward the homosexual, it may be well for us to realize, as Freud pointed out, that no person is 100 per cent male or female, that we are all relatively heterosexual and relatively homosexual and that sex determination is not fixed until relatively late in maturation in the human. The homosexual has been shown to have more of the hormones of the opposite sex in the blood than has the average person. Many persons are heterosexually deficient but not necessarily homosexuals. The psychiatrist realizes that the male who boasts the most about his masculinity and virility, either in words or by promiscuity, is unconsciously fearful of his heterosexual capacity. Likewise, those who would be the most sadistic in the disposition of homosexuals often harbor some unconscious or latent fear of homosexuality. Since sex is largely a biologically determined reaction, most persons have long ago settled this adjustment within themselves, as a result of their own glandular make-up, and it may be dangerous to shake this structure.

Except for the inversion in his sex drive, some masculinity in the female and some feminity in the male, the homosexual is not vastly different from the average normal person. Many homosexuals during the last war served well as yeomen, as corpsmen, as clerks and in other various capacities. I remember several who conducted themselves admirably in combat. As a steady, reliable and faithful worker, the homosexual could not be excelled. In fact, frequently when a homosexual was brought to the psychiatric ward for observation, his commanding officer came to the hospital personally, expressing an interest in the man, hopeful that he could be returned to duty. The words "he's the best man I've got," were used many times to describe a homosexual. We must be fair to the homosexual and stop allowing our prejudices to classify him as an immoral, degenerate individual. Such an attitude causes us to be ridiculously too aggressive in our solution of this problem. When nature has chosen to falter we must accept the biologic facts and adjust our decisions accordingly. A few examples will indicate the errors we have made.

During World War II, when the military service became conscious of so many homosexuals in its midst, a veritable witch-hunting campaign resulted, breaking up homosexual clans in some cases but creating new problems and imposing hardships in others. Some of the enthusiasts in this weird hunt, taking a holier-than-thou attitude, developed a reputation for being able to detect homosexuals and eradicate their clubs, without due consideration for civil rights. The situation approached a state almost of mass hysteria. For instance, on several occasions, I had the experience of being asked to hold for observation an officer or enlisted man whom someone had accused of being homosexual. In cases in which the man was proved to be innocent, there was an irremediable smirch placed upon his record. In addition, many persons with latent homosexuality or insecure heterosexuality became panic-stricken, and some even psychotic, as a result of all this sleuthing activity. For instance, a lieutenant in the intelligence department was warned that he had in his command several homosexuals who must be uncovered and separated from the service. This officer, an unmarried man of 35, was a lawyer of some distinction and a capable and conscientious individual. Somewhat sensitive, a little on the effeminate side, and having never made a heterosexual adjustment, he was the type usually classified as a latent homosexual. Paradoxically enough, however, such a person is so sensitively adjusted psychosexually that any suggestion of homosexuality is likely to disturb his emotional equilibrium. From the moment this officer was asked to search for homosexuals in his command, he became extremely selfconscious, developing ideas of reference, a paranoid delusion and a psychotic reaction which required years to rectify. Such cases impress us most emphatically that heterosexuality and homosexuality are relative biologic conditions which cannot be adjusted to our preconceived ideas of morality and decorum.

One more example may help to point up the prejudice and misunderstanding regarding this subject. A youth with repressed homosexual desires and fears, upon being inducted into the Army, spent the first night in an open barracks. Exposed for the first time in his life to other men in the nude, he retired that night with great anxiety and fear. Soon after lights were out, he began to yell and scream in a state of panic. When the sergeant investigated the commotion, the hysterical youth projected his own desires and fears upon other men. He accused several of them of trying to get into his bunk with him. It took two psychiatrists and some persuasive talk to prevent the sergeant from placing serious charges against the alleged "queers."

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[3] Campbell, J. D., and Greenspan, H.: The Homosexual as a Personality Type, Am. J. Psychiat. **101**: 682 (March) 1945. Footnote 1 f.

We must still postulate the proper disposition of true homosexuals. Actually, in review, it must be stated again that the homosexual is not a malicious person; his is not a moral problem but a medical one; he should not be given a bad discharge any more than the patient with syphilis or tuberculosis should receive a prejudiced discharge; the homosexual is nearly always a patriotic, eager service man. Like the epileptic, who is often discriminated against in civilian life, the homosexual is eager to share his efforts with his fellow citizens. Incidentally, I was aware of no normal person who became homosexual as the result of associating with homosexuals in the service. Most of those discovered frankly admitted that they had been inverted in their sexual adjustment since they first felt any sexual desire. Naturally, the military services cannot condone a condition which is so widely considered the very acme of immorality, but it can take a more practical, common-sense view of the problem. Homosexuals probably should not be enlisted, but if they are it should not be considered a disgrace to the service; if discharged, the man (or woman) should be given a medical discharge. A better solution in the first place would probably be to assign the homosexuals to office or hospital work, not allow too many in any one center, and keep their activities under reasonable observation and control. After all, we do not solve a medical problem by treating it as a crime or trying to deny its existence.

There is one final note regarding the homosexual which should be discussed briefly. Owing to his peculiar position in society, he does not make the best security risk. It has been said that the homosexual, because of the prejudice and discrimination against him, is forced into a minority group, which is more likely to become influenced by foreign ideologies. My experience has not shown this to be true, but I have known of homosexuals who were blackmailed and browbeaten, under threat of having their defect revealed. If it were not for our rigid disciplinary attitude toward the homosexual, the chances of blackmail against him and breach of security on his part would not be nearly so great. The homosexuals with whom I have come into contact have been patriotic, loyal citizens, but for the foregoing reasons I should not recommend that they be allowed to hold positions involving great security risks.

ELECTRIC SHOCK THERAPY

An obvious error in the care of psychiatric patients during the last war was the failure to use electric shock therapy in the base hospitals in the treatment of psychotic patients. In the Navy, psychotic patients were transported from overseas and from base hospitals in the United States to one or two psychiatric centers for therapy. Electric shock treatment, its indications and contraindications, are now so well understood by most psychiatrists that there should be no more hesitancy about its proper use than about the use of major surgery. In fact it is now realized that not to use electroshock therapy in proper cases in the early stages of a psychosis actually constitutes negligence. If surgeons ca be depended upon in a base hospital to decide whe a brain operation or laparotomy is indicated, certainl trained psychiatrists are competent to state when shoc therapy should be used. Not only is it important to abo a psychosis as early as possible, but also the dangers o suicide are always great in wartime psychotic patient

Unfortunately, many of the acutely psychotic patien in the last war were given diagnoses of schizophreni implying that the prognosis was poor and not much improvement could be expected with shock therapy. I retrospect, so many of these patients having been ol served to recover completely in a few months, it is no felt that they were suffering from manic-depressive psychosis, depressed type, and could have been aided co siderably by convulsion therapy. Electric shock admi istered early in such cases would appreciably shorten th illness, prevent complications and in many instanc render the patient capable of returning to limited dut Articles by Paster and Holtzman [4] and Goldfarb an co-workers [5] substantiate these statements.

OMNIPOTENCE OF THE COMMANDING OFFICER

I wish to raise the question here regarding the prope disposition of a commanding officer who is mentall and/or emotionally disabled. Service psychiatrists are a well indoctrinated, and firmly believe, in the idea that th commanding officer of a ship or station should have absolute authority. However, they are not advised of the procedures to follow in case he becomes mentally incapacitated. If psychiatric principles are logical in the dispos tion of enlisted men and other officers, they should b even more so in the disposition of a mentally ill commanding officer. This situation is not rare, and som directive is indicated to cover this contingency.

I knew of one commanding officer of a large hospita (which cost the government several million dollars t build) who was arteriosclerotic, erratic, domineering suspicious and paranoid. Another commanding officer in charge of a supply ship, carrying a complement of 17 men and officers, was intoxicated from the time his shi left the East Coast until it returned to Pearl Harbor fro the Southwest Pacific. All the officers aboard this shi were of the opinion that the commanding officer wa omnipotent and that there was no precedent that coul be invoked to have him replaced. Instances of commanding officers who were suffering from disabling comba fatigue but who refused to ask for relief were not unusual. Other cases could be recited in which a commanding officer became grossly incompetent and yet, legally neither the other line officers nor the medical officer ha the authority to place him on the sick list or depriv him of his command.

A logical remedy would be to allow the executive officer, in consultation with the medical and other senior officers aboard, to relieve the captain, in case of his total disability, as a result of physical or mental illness. The directive should be so worded that all officers aboard a ship having a disabled commanding officer would realize that it was their duty and responsibility to carry out this directive when indicated. On the other hand, in order to prevent errors and discrimination, if it were later proved that the commanding officer was not truly incapacitated those officers would have to answer for a serious breach of regulations. Properly worded, such a directive would place the full responsibility of such a move upon the shoulders of the executive officer, medical officer and other officers aboard. It would provide a wholesome relief from a dangerous and intolerable situation in case the commanding officer were actually disabled.

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[4] Paster, S., and Holtzman, S.: A Study of One Thousand Psychotic Veterans Treated with Insulin and Electric Shock, Am. J. Psychiat. **105**: 811 (May) 1949.

[5] Goldfarb, W.; Dorsey, J. J.; Laughlin, J. M., and Kiene, H. E.: Experiences with the Pharmacologic Shock Therapies in the "Psychoses" in Military Personnel. Am. J. Psychiat. **102**: 602 (March) 1946.

CONCLUSIONS

As a psychiatrist I make the following recommendations:

1. That universal military conscription largely replace voluntary enlistment.
2. That more careful records be kept at induction stations for future military and civilian use.
3. That the minimum intellectual level for examinees be raised.
4. That a more realistic and consistent plan be adopted for the disposition of the psychopathic personality.
5. That a more lenient and flexible attitude be taken concerning the selection and assignment of persons with psychoneurosis. Methods of preventing psychoneurosis should be more widely understood.
6. That a more biologic and humane attitude be taken regarding homosexuals.
7. That electric shock therapy be used more freely in base hospitals in appropriate cases, in an effort to prevent chronic psychoses, suicide, and other complications.
8. That a satisfactory method be established for relieving a mentally ill commanding officer from duty.

355 Doctors Building.

THE COLOSTOMY

ITS RECONSTRUCTION AND CARE

Frederick B. Campbell, M.D.
and
William C. Schaerrer, M.D., Kansas City, Mo.

The purpose of this presentation is twofold: first, to describe a new method of surgical reconstruction of a colostomy, and, second, to outline a simplified plan of management that this reconstruction affords.

Colostomy continues to be the price many must pay to survive, and it is our duty to see that they remain happy and useful citizens.

The problem, then, is to construct a stoma that causes the least inconvenience. Attempts have been made to construct an abdominal stoma with control but this has not been successful except as reported in a few rare instances.

Since even the best constructed and managed colostomy requires the wearing of a small pad, the stoma should be located in an inconspicuous place. The placing of a colostomy in the left lower abdominal quadrant is advocated by many surgeons. Experience has not proved any practical reason for this, and a bulge can be more easily camouflaged in the midline. Since most resections of the rectosigmoid area are done through a left paramedian incision, it seems much simpler to bring the terminal sigmoid out through the incision a few centimeters below the umbilicus. Here the opening is easily accessible for irrigation, and the stoma will not be traumatized by the wearing of a belt.

Hirschman has insisted for many years that the umbilicus is the logical site for the colostomy. The only objection to this location at the belt line is the possibility of trauma to a protruding portion of bowel, but this objection is obviated by reconstruction in order to leave the mucosa flush with the skin.

Lahey,[1] Cattell,[2] Breidenbach [3] and others state that a portion of bowel should protrude for varying distances above the skin to avoid stenosis. In our opinion this is not a factor in stenosis. We believe that at the time of the resection and colostomy construction a portion of bowel should extend beyond the skin a sufficient distance, ½ inch (1.3 cm.) or more, that viability can be definitely determined following operation; also, as healing progresses, proper anchorage to the abdominal wall can be assured.

Without secondary reconstruction the most nearly ideal colostomy can be made with the Daniel [4] clamp, and its use cannot be recommended too highly. One advantage of this clamp is its small size, which permits easy incorporation in the postoperative dressing without inconvenience or danger of trauma. Another advantage is the opening in the clamp that permits the introduction of a catheter into the bowel at the conclusion of the operation and allows immediate deflation. Even with the use of the Daniel clamp, it is our conviction that the most satisfactory colostomy stoma can be made by secondary reconstruction.

Stenosis may occur at the skin level or at the fascia level and results primarily from too tight a closure. The degree of contraction varies with the fibroblastic diathesis of the patient and the added stimulus resulting from trauma, infection or cauterization. The method of reconstruction to be described produces a minimum of scar tissue, with the result that a stenosis should seldom, if ever, occur at the skin level. It has not been necessary to enlarge the outlet in any of our reconstructed colostomies trimmed by the method described.

A protruding portion of bowel requires a bulky dressing. It is traumatized to the degree that bleeding is fre-

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Read before the Section on Gastro-Enterology and Proctology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

[1] Lahey, F. H.: The Truth About Colostomy, Lahey Clin. Bull. 5: 130-136 (July) 1947.

[2] Lahey, F. H., and Cattell, R. B.: Two Stage Abdominoperineal Resection of Rectum and Rectosigmoid for Carcinoma, Am. J. Surg. 27: 201-213 (Feb.) 1935.

[3] Breidenbach, L., and Slattery, L. R.: Construction and Care of Permanent Colostomy, Am. J. Surg. 77: 344-349 (March) 1949.

[4] Daniel, W. H.: Colostomy Clamp, Am. J. Surg. 71: 103-104 (Jan.) 1946.

quent and hypersecretion from the irritated mucosa keeps the dressing moist. With the reconstruction here described, moisture is minimized, bleeding is rare and a snug-fitting belt or corset is worn with no telltale bulging mass to be traumatized.

Most patients desire the reconstruction of the colostomy before they leave the hospital. This is much more easily accomplished after the edema has subsided. Edema and bleeding make reconstruction impractical in less than 14 days following resection. However, those willing and able to leave the hospital early may return for the operation as an outpatient, or it may be done as an office procedure. The daily routine of colostomy care is not interrupted.

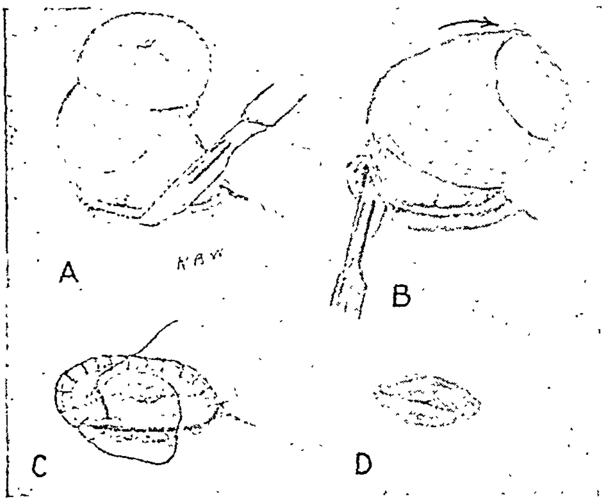

Fig. 1.—Colostomy reconstruction. *A*, incision of skin close to protruding stoma. *B*, amputation at skin level. *C*, sewing of mucosa to skin. *D*, healed colostomy.

TECHNIC

The type of anesthesia is optional, but the usual procedure is the local infiltration of 1 per cent procaine (novocaine®) hydrochloride solution. An incision is made through the skin, but as near the bowel wall as possible (fig. 1 *A*). The size of the opening in the skin may be determined by the distance of the skin incision from the bowel. If a tendency to contraction is shown, a larger skin opening should be made. After the skin has been incised, the protruding portion of bowel is then amputated at that level (fig. 1 *B*). Two or three vessels will require a fine tie. A short cuff of mucosa is left to afford easy apposition to the skin without undue tension. Mucosa is then sutured to skin with a lock stitch, using 0 surgical gut on a sharp cutting needle (fig. 1 *C*).

More accurate apposition is obtained by passing the needle in through mucosa and out through skin. This step should be done with meticulous care because it is the accurate apposition of mucosa to skin that minimizes scar formation and thereby minimizes contraction. The cautery is not used for amputation because of the resulting inflammatory reaction and the tendency to stenosis.

Mucosa accurately sutured to skin with a minimum of trauma and no area left to granulate results in very little scar tissue or contraction. Traumatized tissue, inaccurate apposition and a granulating surface may result in stenosis whether mucosa protrudes above the skin or recedes below it.

SUBJECTIVE RESULTS

The patient with a new colostomy may reach a new low in mental depression after first viewing a beefy, red, swollen segment of bowel. There is a great sense of relief when this mass is replaced by a small, pink depression (fig. 1 *D*).

We have reconstructed a number of our older colostomies, and the gratitude of every patient is definite evidence of the desirability of this type of flat reconstruction over the protruding stoma. Without exception their satisfaction seems out of proportion to the anticipated improvement.

A vivid testimonial to the desirability of the reconstructed, flat stoma as compared with the protruding stoma was the case of a radiant woman 37 years of age who said that she had just bought her first close-fitting spring suit since her colostomy 10 years ago. Three weeks previously we had removed a 1 inch (2.5 cm.) protruding stoma as an office procedure.

Constructing a colostomy is the simplest part of the management of a patient requiring such a procedure. The degree of psychic trauma varies. In every patient the period of readjustment is characterized by some depression and discouragement. It is during this period that instructions are given in diet and irrigations. It is also the time to fix the idea firmly that normal activities will be resumed. This is only another handicap to overcome as other handicaps, necessitated by the use of glasses, dentures, a hearing aid, a crutch or a truss, are overcome.

Ulin [5] reminds us not to think of the colostomy but of the patient with the colostomy. Some persons adjust themselves more readily than others. Those of intelligence who have met the problems of living and adjusted satisfactorily to other stresses will also adjust to the new handicap in a philosophical manner. Whenever possible, another patient's experience in colostomy care can be of inestimable value in boosting morale. However, only the

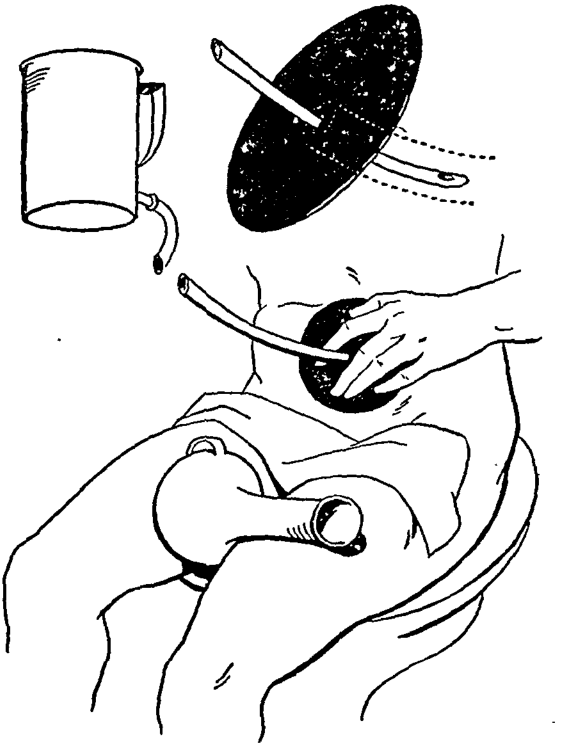

Fig. 2.—One method of irrigating the colon.

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[5] Ulin, A. W.: Management of the Patient with Colostomy, Mississippi Valley M. J. 70: 13-19 (Jan.) 1948.

help of a patient considered cured should be sought because one who dies later from metastasis is a distressing example.

A SIMPLIFIED PLAN OF MANAGEMENT

Most colostomized patients become inventors. Each evolves a technic that is satisfactory for him, and many have developed, patented and marketed an apparatus. Several of these have a closed irrigating system that is clean and convenient. While such an apparatus appears to be the answer to the problem, nevertheless, most patients revert to the simplest method with the fewest parts to clean. It has, therefore, seemed best to teach each patient the fundamentals of irrigation by the simplest method, later giving each an opportunity to try a more advanced type of apparatus.[6] Certainly, the paraphernalia used are of minor importance. The important thing is the injection into the colon of a quantity of water sufficient to fill it and to obtain a complete emptying of the colon with the expulsion of the water. This may require 1 to 3 pints (473 to 1,419 cc.) of water, depending on the length and diameter of the colon remaining. Slightly cool water may give more rapid peristaltic action, or at times a hypertonic saline solution, such as 2 teaspoons (8 to 10 cc.) of table salt to each pint of water, may be more effective.

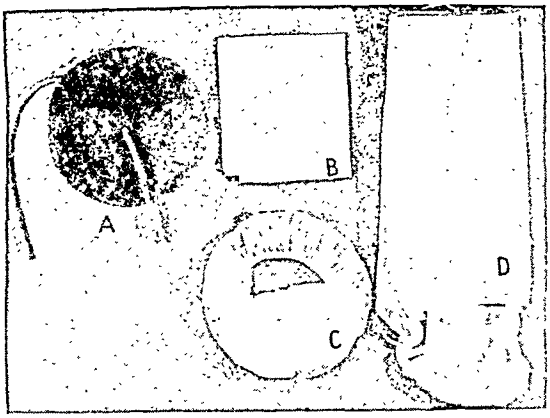

Fig. 3.—*A*, circle from inner tube with catheter. *B*, small-sized plastic bowl cover over cleansing tissue. *C*, large plastic bowl cover with coil of cellucotton.® *D*, wide elastic band supporter.

It is important to stress the fact that a sufficient amount of water must be injected into the colon at one time to fill the cecum at least partially if complete emptying is to be attained. To do this, it is necessary to prevent an escape of the water from the stoma until the desired amount is injected. The escape of water is prevented by the use of a simple device made by inserting a no. 18 or or 20 French catheter through a piece of rubber 3 or 4 inches (7.6 or 10.2 cm.) in diameter cut from an automobile tire inner tube. The catheter is inserted 2 or 3 inches (5 or 7.6 cm.) only. The rubber disk is pressed against the stoma, preventing the escape of the water from around the catheter until the desired amount is injected (fig. 2). Another method of control of the solution is to insert the catheter through a tip of a large nursing nipple and use it in the same manner. A urinal is quite satisfactory for collection of the discharge. The supplies listed here are cheap and easily obtained. A colostomy irrigator with a closed system that is clean and convenient is available and is satisfactory to many. While this refinement is recommended, some patients prefer the above described technic.

The bulk of the injection will usually return in a short time. Those who retain a portion of the solution longer may avoid inconvenience and loss of time by wearing a medium to large-sized plastic bowl cover containing a coil of cellucotton® (fig. 3 *C*). After one-half to one hour this is discarded. A spot of petrolatum jelly on a cleansing tissue is placed over the stoma; then a small-sized plastic bowl cover (fig. 3 *B*) is placed over that and held in place by an elastic belt (fig. 4)—the "two way stretch" girdle for women and a wide elastic band supporter, such as the so-called bracer royal® for men (fig. 3 *D*). This can be obtained at most drugstores. With the proper diet and without excessive emotional stress, there is no further discharge until the enema is repeated the following day.

The standardization of the care of the colostomy is as impossible as the standardization of individual persons. Our duty is to teach the fundamentals, then let each work out the plan best suited to his mode of living. Some prefer to take the irrigation at night; others use it only every other day, while a few have such perfect function that evacuation occurs only at certain intervals and no irrigation is necessary.

The problem of diet is sometimes confusing. With the present shortage of hospital personnel, we have not found it practical to have a special diet for hospitalized patients. It has been quite satisfactory to allow them the routine postoperative high calory, low residue diet. It is helpful to all patients to have a diet list in the beginning, but

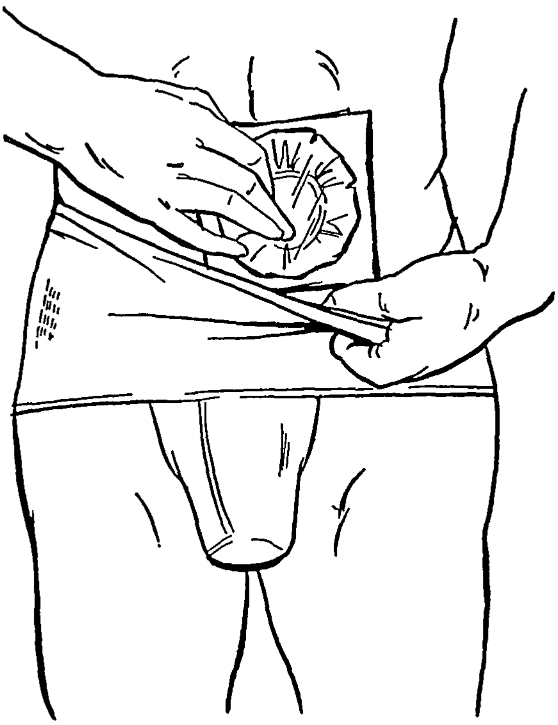

Fig. 4.—Cleansing tissue, plastic bowl cover and wide elastic band supporter being placed over colostomy.

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[6] Such an apparatus is the Perry colostomy irrigator, obtainable at 112 Hennepin Avenue, Minneapolis.

the patient with no imagination and poor judgment requires a definite list.

When discharged from the hospital, each patient is furnished a diet list, with instructions to use this as a general guide only, to note carefully the effect of various foods on the altered intestinal tract and to choose the diet causing the least colon activity.

It seems difficult for some to grasp the idea that the intestinal tract will handle the same food in the same way as it did before operation and that any tolerated food will not harm the colostomy. Patients should be made to understand that concessions in diet are made because of the altering of the intestinal tract and for their convenience only. In order to avoid bowel movements at inopportune times the diet should be low in residue; it should not be laxative or contain foods that produce excessive gas. It should avoid all items that are known to disagreee with the patient. The patient soon learns from experience, and no detailed instructions are needed.

Only the surgeon can give the patient an ideal colostomy stoma. It is also his duty to rehabilitate the patient by adequate training in colostomy care. Should he fail, the family physician should complete the training left undone by the surgeon.

SUMMARY

A new method of reconstruction to improve the colostomy stoma is described. Its advantages are less mucosal trauma, a drier stoma, simplified dressing, minimal stenosis and better patient acceptance.

The care of the colostomy is described, including psychotherapy, method of irrigation and dressing and diet.

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ABSTRACT OF DISCUSSION

Dr. William H. Daniel and Dr. George C. Tyler, Los Angeles: This subject is so important that it should be the basis of frequent papers and discussions. If time was given to the establishment and management of this necessary adjunct to the cure of cancer of the rectum, there would be fewer attempts to obviate it and a greater number of patients would be alive after five years. Few patients refuse the abdominal colostomy if it has been impressed on them that it will allow a better chance for cure, and that the surgeon will give them his personal attention in its management. The surgical responsibility is only partially consummated when the patient is sent back to his family physician, with little or no advice as to after-care. For years we have preferred the midline colostomy and the umbilical site if the terminal sigmoid segment will lie in it without tension. We excise the umbilicus if it appears of a type difficult to keep clean. The use of a special clamp, designed to permit firm adherence of the bowel to the abdominal wall and early decompression, has simplified the establishment and hospital management of the colostomy. The bowel is allowed to extend above the skin ½ to 1 inch. If normal shrinkage does not result in the attachment of the mucosal surface to the skin, the excess is removed during the hospital stay or later, depending on the amount of fat around the bowel. It is also our opinion that the end of the bowel should be flush with the skin. The opening should admit easily the examining finger the full length. A narrowed or strictured opening prevents proper emptying, resulting in frequent small stools. It necessitates irrigations. The larger opening permits a semblance of normal bowel function. We prefer not to teach the patient the regulation technic until he has had a sufficient period of convalescence to become accustomed to his colostomy. We have done many colostoplasties in the office but in the past several years have found it more advantageous to excise the offending scar tissue in the hospital under intravenous anesthesia. The patient goes home the next day, and the sutures are removed in the office.

Dr. Frank H. Lahey, Boston: This paper has all the information in it that is of value, and it is sound and correct. I have no hesitancy about placing colostomies even in the left or the center, if I choose. The only place I do not want a colostomy is where the patient can see it only with a mirror, where he cannot manage it as well, where it can leak by gravity and where he cannot get at it well between the gluteal folds. If you place a colostomy without a sphincter in the perineum, it is because you think a patient will like it, and, of course, he has no background of experience on which to decide until he has a colostomy. The colostomy that has a bad name deserves it, and the colostomy that ought to have a good name does not deserve the bad name it gets. The palliative colostomy with the lesion retained deserves a bad name because it is not the colostomy but the retained lesion that causes the trouble. When a patient has a palliative colostomy and a retained lesion, all his friends are unfortunately so vocal that the whole neighborhood knows it is a bad affair; but it is unfortunate that the patient with a colostomy with the lesion removed is secretive. He will go with you to a person who is to have a colostomy, but he will not advertise to the neighborhood how well he can manage his colostomy. That has been part of the cause for the bad name that colostomy has, and it often deters persons from coming to surgery as early as they otherwise would. I do not think it is important whether colostomies are placed on the left or in the middle. They work all right in either place. It is important that the colostomy functions well, that it will not constrict; some of them will constrict, anyway. The success of a colostomy depends on how well you train the patient. These patients are all skeptical about what you tell them. When you tell them that they will be able to do everything they want to, they do not believe you. They really need four to six months in which to become convinced and to learn what liberties they can take with their constipating diet. A patient with a colostomy should be taught to constipate himself so that he substitutes irrigation for defecation. For that reason it is extremely important not to let the patients get out of your hands but to keep in touch with them by mail, by telephone or, better, by direct contact, until they reach a stage where they have become confident that they can manage their colostomies, and then they become enthusiasts. We do not like colostomies at skin level. We want colostomies well outside the skin level for 1 to 2 inches. Probably most of you do not do colostomies, but you must remember that most of the colostomies, the end colostomies, are nourished by marginal vessels. They are the marginal branches that run from the sigmoidal artery along the margin of the bowel, and this is true of ileostomies, also. For these reasons, they ought to be looked at every night for a minimum of five or six days, because as the result of vomiting, retching or sudden strains this end colostomy or ileostomy can be put under such stress that the marginal vessel is torn so that the bowel loses its blood supply. If the bowel loses its blood supply, and you can see that this has occurred within four or five days, you can do a second operation and save the patient's life. If it is allowed to go longer than that and perforate into the wound, it can produce wound destruction or separation or, if below the level of the peritoneum, peritonitis. Almost all our strictures are a result of keloid skin contractions about the edge of the colostomy. We manage them in the office by infiltrating the skin about the colostomy with procaine, and then taking a little piece of skin out of the upper and lower parts of the scar, thus breaking the ring. We then train the patients to pass his finger through the colostomy every time he irrigates it. We try not to create a reservoir beneath the abdominal wall, because that makes a tortuous colon into which it is difficult for the patient to introduce the catheter.

Dr. A. F. R. Andresen, Brooklyn: It has been pointed out that it takes four to six months for a patient to get fully accustomed to a colostomy. Dr. Lahey mentioned the advantage of having a person with an old colostomy help in explaining the situation to the patient. We have several intelligent patients with successful results from colostomies for cancer who have offered to visit patients with recent operations, show them how well they are and tell them how their colostomy does not interfere with their normal ways of life. Such a visit gives the patient with the newly acquired colostomy a definite psychological lift.

FRACTURES OF THE DORSAL AND LUMBAR VERTEBRAE

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and
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The literature is voluminous on the nonoperative care of fracture of the spine but rather sparse on the operative treatment. A long time follow-up study of both types of treatment should help to clarify the indications for each. The indications usually have been based, in the early cases, on the amount of wedging of the vertebral bodies as evidenced by roentgenograms and, in the late cases, on the persistence of pain and disability. Soft tissue pathology has received little consideration. Equally important is the physician's obligation to shorten hospitalization and rehabilitate the patient as quickly as possible in order to reduce the period of nonproductivity. Disability for work threatens the economic stability of the patient and is a financial burden to the insurance company.

A study was made of all the cases of fractured dorsal and lumbar vertebrae at the New York Orthopaedic Hospital and Dispensary from 1920 to 1948, of which only those of five or more years' follow-up were used. All the rest of the cases, including those of pathological and transverse process fractures, were discarded. The decision to use the five year minimal follow-up was arbitrary and was arrived at by noting that nearly all the late cases were of patients who were seen in the clinic for the first time about five years after injury. They had been treated by various methods in many clinics and did not represent the true end result of fracture of the spine but were a group who had persistent symptoms after injury. Sixty-three cases were sufficiently documented to form the basis of the first half of this study, with an average follow-up of over 11 years.

COMPARISON OF SURGICAL AND NONSURGICAL TREATMENT

The surgical group consisted of 30 cases, in 13 of which there was spinal fusion within two months of injury. In a few cases correction of the deformity by hyperextension was attempted. Late fusions were done in 17 cases an average of five years after injury. A Hibbs type of spinal fusion was done in all cases, and in most of them the vertebra above and below the fractured one were included in the fusion.

In a second group of 33 cases, nonoperative treatment had been given elsewhere with a reverse Gatch bed, Bradford frame or simple bed rest. This was followed by wearing of a hyperextension plaster jacket for two to six months and usually by a brace up to a year, sometimes with hyperextension exercises. The late treatment at our hospital consisted of heat, massage, hyperextension exercises and, in some cases, further support with a brace or corset. Since in this group treatment was given mainly at other institutions, no relation of the treatment to the end results can be determined and it cannot be said that the treatment the patients received necessarily was ideal or even satisfactory. The patients in this nonsurgical group took a month longer to reach the point of being able to do light work and five months longer to do heavy work.

The American College of Surgeons' method of end result rating was used in an attempt to give an over-all picture of the two groups. Of the patients with fusion of the thoracic portion of the spine, 67 per cent were 4-4-4 to 3-4-4, all asymptomatic. Thirty-three per cent were 4-3-4 or 3-3-4, with slight symptoms, but could do their previous work. Half of these had only weather ache, and the other half felt some ache after long hours of work. Of the patients with fracture of the thoracic area of the spine without fusion, 14 per cent were asymptomatic, 14 per cent had slight symptoms and the remaining 72 per cent were rated lower because of pain, stiffness, deformity and inability to do former work. The results were similar for patients with lumbar spinal fracture: with fusion, 58 per cent were asymptomatic, 34 per cent had slight symptoms, and the remaining 8 per cent had moderate to severe symptoms and disability. Without fusion, 12 per cent were asymptomatic, 12 per cent had slight symptoms, and the remaining 76 per cent were rated as fair or poor owing to moderate or severe symptoms and disability. A much higher percentage of the patients with early fusions were asymptomatic than were those with later fusions. All 30 patients having spinal fusion could do full heavy work except one, who was restricted to lighter duties, even with a solid fusion. There were three patients with pseudoarthroses that were corrected at a second operation.

TABLE 1.—*Late Cases of Dorsal and Lumbar Fractures*

	Fusion	Nonfusion
Cases	30	33
Hospitalization	8.5 wk.	4.0 wk.
Light work	5.8 mo.	6.6 mo.
Heavy work	8.7 mo.	14.2 mo.
Follow-up	12.2 yr.	10.6 yr.

TABLE 2.—*Late Cases of Dorsal and Lumbar Fractures*

Final Rating *	Fusion	Nonfusion
Dorsal		
Asymptomatic 4-4-4 to 3-4-4	67%	14%
Slight Symptoms 4-3-4	33%	14%
Moderate and Severe Symptoms	0%	72%
Lumbar		
Asymptomatic 4-4-4 to 3-4-4	58%	12%
Slight Symptoms 4-3-4	34%	12%
Moderate and Severe Symptoms	8%	76%

	Fusion	
	Early	Late
Asymptomatic	71%	33%
Symptomatic	29%	67%

* Final rating denotes A.S.E. A represents anatomy, S. joint motion and symptoms, and E, economic rehabilitation; 4 equals 100 per cent; 3 equals 99 per cent to 76 per cent, etc.

EVALUATION OF EARLY CASES

With such dramatic differences in the results of surgical and of nonsurgical treatment in the late cases of fractured vertebrae, it was considered that an evaluation of early fractures would be desirable. Accordingly, those

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fractures of the thoracic and lumbar portions of the spine seen on the fracture service of the Columbia-Presbyterian Medical Center in New York city from 1929 to 1948 were studied. The follow-up of the patients was good, and they were given the treatment considered best by the fracture service. Fractures of the transverse processes, pathological fractures and those with less than six months' follow-up were discarded. There is a total of 125 cases that were sufficiently documented to be used.

If roentgenograms revealed no posterior element involvement and there were no neurological symptoms or signs, the patient was treated by immediate hyperextension on a reverse Gatch bed until reduction was obtained or until pain subsided. Hyperextension was maintained, and a plaster body jacket was applied on Goldthwait irons, by suspension between two tables of different height, or by suspension by the legs in the prone position. *In several cases direct pressure was applied over the kyphos while the patient was under anesthesia. He was* made self-ambulatory and was given hyperextension back exercises two or three days after the cast was applied. Those patients who were initially treated with a brace but not with a cast because of minimal compression, age, lack of cooperation or obesity had symptoms for a longer period in the course of treatment.

TABLE 3.—*Early Cases of Dorsal and Lumbar Fractures*

Final Rating	Dorsal	Lumbar
Anterior Compressions		
Asymptomatic 4-4-4 to 3-4-4	59%	48%
Slight Symptoms 4-3-4	24%	35%
Moderate and Severe Symptoms	17%	17%
Posterior Elements		
Asymptomatic 4-4-4 to 3-4-4	100%	20%
Slight Symptoms 4-3-4	0%	40%
Moderate and Severe Symptoms	0%	40%
Lateral Compression		
Asymptomatic 4-4-4 to 3-4-4	50%	50%
Slight Symptoms 4-3-4	0%	33%
Moderate and Severe Symptoms	50%	17%

The patients with fractures of the thoracic portion of the spine returned to light work in an average of eight weeks, while those in the lumbar classification did so in an average of 17 weeks. Heavy work was started in both categories in an average of 10.5 months. The average follow-up was five years.

A final rating study showed that 59 per cent of the patients with fractures of the thoracic portion of the spine had no symptoms and 24 per cent had slight symptoms. Of patients having fractures in the lumbar area, 48 per cent were asymptomatic and 35 per cent had slight symptoms. Of both the thoracic and lumbar patients, 17 per cent had persistent pain that was disabling. Patients with multiple vertebral fractures had a slightly higher symptom rate. The symptomatic results of the lateral and anterior compression fractures were similar, except in the thoracic portion of the spine, where the symptoms of the lateral fractures were severer. Only 20 per cent of the patients with fractures of the posterior elements in the lumbar area were free of symptoms, while all the patients with fractures in the thoracic area were asymptomatic.

The roentgenogram was used as another method of comparison. For purposes of analysis, the fractures were divided into classifications of those involving the vertebral body alone and those with associated posterior elements fractures and fracture dislocations. The uncomplicated vertebral body fractures were classified as anterior or lateral compressions. The anterior compressions were subdivided into four classes according to the degree of compression. The first class consisted of patients with minimal compression of the anterior height of the vertebral body or a small anterior lip fracture. Mild compression involved up to one fourth of the anterior height of the vertebral body, moderate compression from one fourth to one half of the height of the vertebral body and severe compression over one-half. The moderate and severe types were for the most part comminuted, and represented about one fourth of the total. Many of these comminuted fractures are difficult to visualize roentgenographically, but the residual deformity in most of the moderate to severe types demonstrates that the vertebral body must have been comminuted originally. The minimal type of fracture was seen almost entirely in patients in the first two decades of life, the moderate type, throughout adult life, while the severe type was seen only in patients from 41 to 60 years of age. The greater the compression, the severer were the residual symptoms, except in some of the moderate and severe types in which spontaneous fusion occurred. The majority of patients with mild compression fractures in the thoracic spinal area were asymptomatic, while of those with fractures in the lumbar area, only half as many had no complaints. Lumbosacral symptoms sometimes supervene after a fracture higher in the spine owing to postural changes.

All the severe type of fractures and over one half of the moderate type eventuated in spontaneous anterior bony ankylosis, but symptoms persisted in the majority of patients for more than a year. However, these patients became asymptomatic, in the final evaluation, after ankylosis had occurred. In 94 per cent of the cases in which the compression of the vertebral body was reduced partially or totally in the roentgenograms, much or all of the correction was eventually lost. The collapse occurred in a small percentage of the fractures while the patient was in the hyperextension cast, which was worn for an average of nine weeks, but in the majority of cases the collapse took place while the patient was in his brace. There was no difference in the symptomatic end result, whether the fracture was reduced and collapsed or was never reduced.

The patients with post-traumatic thinning of the intervertebral space had no severer symptoms than did those with a normal interspace following fracture. The preponderance of narrowed intervertebral spaces was found in the moderate and severe compression fractures. Likewise, osteophyte formation at the fracture site following the injury showed no correlation with symptoms. The patients with spur formation prior to fracture had their symptoms prolonged somewhat, but the end results were the same.

COMMENT

Some criticism may be leveled at the nine week average cast immobilization in our early fracture group. Yet collapse of the vertebral body is seen as long as seven to nine months after injury, with no evidence of aseptic necrosis, and the end result is not altered by the treatment. The patient is more comfortable in hyperextension casts than in braces or without support and can be discharged from the hospital much sooner. The application of a cast following correction of the compression did not alter the course of osteophyte formation, narrowing of the intervertebral space or spontaneous ankylosis. Compression fractures of moderate to severe type hardly can occur without partial or complete tearing of the interspinous and interlaminar ligaments or the capsule about the facets, as flexion and extension take place about an axis in the body of the vertebra and not about the facets.

Compression fracture of the spine should be considered as a joint injury and not just as an injury to the bone. The fracture always heals regardless of the treatment, but the damaged soft tissue produces residual symptoms. It is difficult to see how a posterior element fracture can occur without marked soft tissue damage. On direct vision at spinal fusion in many of the early cases, the soft tissue damage was much greater than was anticipated and involved the muscles as well as the ligaments. In some of the later cases, marked instability of the involved joint still can be demonstrated. It is also noted that 15 per cent of the patients at operation revealed posterior element fractures not recognizable on routine roentgenograms.

With compression of the vertebral body the facets are incongruous and it is readily seen how degenerative arthritis might ensue; however, although more than 17 per cent of the patients should have disabling symptoms and progressive pain should be the rule, these signs do not appear. The highest symptom rate was observed in the laborers 41 to 60 years old, with moderate to severe compressions. In this group, if spinal fusion is done initially, the hospitalization may be increased by several weeks but the period of rehabilitation will be shortened and many of the subsequent symptoms will be prevented. Spinal fusion is rarely indicated for persons under 20 years of age. Beyond the age of 60 years, often the patient is not a good operative risk. The hazards of spinal fusion are minimal if the operation is done by a surgeon skilled in its technic and in favorable circumstances. The fusion should include only the vertebra adjacent to the compression and thereby produce a negligible limitation of motion. On the other hand, in many of the late cases limitation of motion is observed clinically after fusion because of the prior fibrosis in the paravertebral musculature, following prolonged spasm in the attempt to immobilize a painful back.

Spinal fusion should be considered in all cases of posterior element fractures in the lumbar area, as nonunion and residual pain are common in these fractures when a fusion is not done. Spinal fusion is the treatment of choice in fracture-dislocations of the spine because the period of hospitalization will be decreased and the patient will be back to heavy work within a shorter interval.

We have not mentioned the cases with neurological signs and symptoms, since this is a combined neurosurgical and orthopedic problem. If a laminectomy is performed and at that time increased mobility or fracture of the posterior elements is noted, a fusion should be done at the same time. There were several paraplegic patients not having a five year follow-up and therefore not included in this report. Walking with crutches, they had painful backs but subsequently were relieved by spinal fusion.

CONCLUSIONS

On the basis of a study of 125 cases of compression and posterior element fracture of the spine treated from the beginning, 33 late cases of patients with residual symptoms and 30 patients treated by spinal fusion and followed up for more than 11 years, the following conclusions are drawn:

1. Only 17 per cent of all compression fractures, including minimal ones treated conservatively, are permanently disabling.
2. Compression fractures not reduced have no higher symptom rate than have those that are reduced and collapsed or reduced and retained. However, the postural disturbance caused by the kyphos is sometimes followed by lumbosacral pain.
3. Ninety-four per cent of the reduced compression fractures collapse when treated with a hyperextension cast, brace and exercises.
4. Spinal fusion for patients having old compression fractures with persistent symptoms gives overwhelmingly better results than does "conservative" treatment.
5. Early spinal fusion gives better results than does late spinal fusion.
6. Spinal fusion allows the patient to return to heavy work sooner.
7. Spinal fusion allows laborers to resume heavy work which they otherwise could not do.
8. Moderate and severe fractures in laborers 41 to 60 years of age should have surgical consideration.
9. All posterior element fractures in the lumbar area should be fused.
10. Compression fracture of the spine is often more important as a joint injury than as a fracture, and residual symptoms are due to damage to the joint and soft tissue.

ABSTRACT OF DISCUSSION

Dr. Joseph M. Janes, Rochester, Minn.: I am in complete agreement with the statement that, when one sees an old compression fracture with symptoms, spinal fusion gives much better results than does conservative treatment. However, when one sees a fractured thoracic or lumbar vertebra early, one has to decide whether fusion is indicated. It is indicated in grossly comminuted fractures of the body of the vertebrae and in fractures of the posterior elements in the lumbar area. A useful method of fusion, which is little practiced in this country, is that described by H. A. Brittain, of Norwich, England, in which he uses multiple cortical matchstick grafts placed in a suitably prepared bed. These grafts are put in place as one would lay bricks. They have the advantage of being adaptable to any contour; they do not melt away as cancellous bone may do. They cannot be used when a laminectomy has been done, because of the possibility of pressure of the small grafts pressing on the cord. Following fusion, at least four months' plaster jacket immobilization is advised. The patient begins his spinal extension exercises relatively early. At the end of four months, with conscientious exercise, the patient's spinal musculature should be stronger than when the plaster was applied. Further immobilization in Taylor's apparatus is not required. If conservative treatment is decided on, it varies with the site of compression and with the degree of compression. Minor wedging of the upper thoracic region of the spine may be treated with rest until the acute symptoms have subsided, then by heat and exercise. More severe wedging of the lower thoracic and lumbar vertebrae is treated by reduction, cast immobilization in hyperextension and exercises. Fracture dislocation with locked facets and extension fractures must not be treated with hyperextension. In many cases, the cast is removed too soon. This may account for the collapse of the vertebrae that is so frequently observed. The serious import of collapse has, however, been questioned, and the present trend of thought seems to be that loss of the original reduction seldom causes persistent pain. It is felt that more attention should be paid to the rehabilitation of the musculature. The authors have shown that the patient with a broken back need no longer consider himself a cripple. The figures for their treatment of recent fractures of the thoracic and lumbar vertebrae compare favorably with those of the Royal Air Force, in which organization, out of almost 1,000 patients with broken backs and necks, approximately 946 returned to duty. The reasons given for these results are improvements in surgery and in rehabilitation with exercises.

Dr. Donald King, San Francisco: Our knowledge concerning fractures of the spine has been steadily increasing since Wallace, in 1923, first published his method of gradual correction of the deformity by the use of a special bed frame. Six years later, Davis presented his technic of suspending the prone patient by means of a sling around the ankles, thus hyperextending the spine and obtaining reduction of the crushed vertebra through pull of the anterior longitudinal ligament on its anterior surface. This dramatic turn of events created much renewed interest in the fractured spine, as it was now realized by all that these fractures could be reduced. This renewed interest had led to the development of a number of special methods and special apparatuses designed to facilitate and increase the safety of the manipulative procedure. For the uncomplicated compression fracture, it has become routine treatment to extend the immobilizing plaster and to carry out rehabilitation exercises earl regularly and over a prolonged period. Most of us have follow this type of program, but few have troubled to survey th results critically. E. A. Nicoll, of Mansfield, England, writi in the August 1949 issue of the *Bone and Joint Journal*, h thrown a bombshell into this placid scene by stating that the is little relationship between the anatomical appearance of t spine and its function; that in stable dorsolumbar compressi fractures, it is often the best treatment to disregard displaceme to avoid plaster fixation and to start rehabilitation exerci soon after the injury occurs. The authors find that 94 per c of their reduced compression fractures collapsed under tre ment, but recurrence of compression or lack of reduction seem *to make little difference in the symptom rate, that is, the fi* symptom rate. This finding, as that of Nicoll, is stimulating a provocative. It suggests that perhaps the rather trying prolon immobilization in plaster is, after all, unnecessary in cert types of uncomplicated anterior compression fractures of stable type.

Dr. Orren D. Baab: I am pleased that both Drs. Janes a King referred to Nicoll, but I should like to clarify one stateme Nicoll states that in isolated injuries of the neural arch, patient with grafting was able to resume strenuous undergrou work. In our 30 cases of compression or posterior element fr tures of the vertebrae in laborers treated with spinal fusi with an average follow-up of over 12 years (some 20 yea all returned to heavy work except one.

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SUPRACERVICAL HYSTERECTOMY AND CARCINOMA OF THE CERVIX

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With the advent of modern surgery, it was to be expected that surgical removal of the uterus should become commonplace. The practice of performing the supracervical (subtotal) type of hysterectomy made it inevitable that there should be a certain incidence of malignant disease arising in the cervical stump at a later date. Since the first report, in 1896 by Chrobak,[1] numerous accounts of this condition have appeared in the literature.[2]

Basically, cancer arising in the cervical stump at a date remote from hysterectomy differs little in symptomatology, histological diagnosis or clinical behavior from cervical cancer occurring in the presence of the uterine fundus. Inasmuch as the chief factor setting these cases apart from the usual form of carcinoma of the cervix is the previous supracervical extirpation, it is probable that the incidence of carcinoma of the cervical stump varies directly with the number of times the supracervical operation is performed. Thousands of cases are contained in the reported series (over a thousand in the German literature alone).[3] The incidence of stump carcinoma in collected statistics varies from 0.1 to 6 per ce of the subtotal hysterectomies performed.[4] It is axioma that malignant disease arising in the remaining cervi stump is nearly always preventable, since total remo of the uterus is surgically feasible in practically all p tients. As long as subtotal hysterectomies are being pe formed, however, a subsequent percentage of stun carcinoma is inevitable.

During a period of about 10 years (1939 to Ap 1950), 28 cases of carcinoma of the cervical stump ha *been observed at the Gynecology Tumor Conference* the Ohio State University Hospital. This figure rep sents 11.6 per cent of the total number (241) of cas of carcinoma of the cervix followed here during th time. For analysis, these cases have been grouped in two categories: (A) those cases in which the subto hysterectomy and the onset of clinically evident car noma were widely separated in point of time (22 cases and (B) those cases in which the subtotal hysterecton was done at a time when the patient already had presu ably clinically recognizable carcinoma of the cervix cases).

The findings in our 22 cases of group A were not su stantially different from the findings in the larger report series. There was noted a long interval between the su total hysterectomy and the onset of carcinoma symptom the average interval being 17.9 years (extremes, 5 ar 35 years). As might have been anticipated, vaginal blee ing, varying in amount from spotting to a severe initi hemorrhage, was the major presenting complaint in eac

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[1] Chrobak, R.: Monat. f. Geburtsh. u. Gynäk. 3: 185, 1896; cited from Ricci, J. V.: One Hundred Years of Gynecology, Philadelphia, The Blakiston Company, 1945.

[2] (*a*) Meigs, M. V.: Am. J. Obst. & Gynec. 31: 358, 1936. (*b*) Cosbie, W. B.: ibid. 51: 751, 1946.

[3] Koch, F.: In Yearbook of Obstetrics and Gynecology, Chicago, The Yearbook Publishers, Inc., 1948.

[4] Behney, C. A.: Am. J. Obst. & Gynec. 40: 780, 1940.

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of these patients. The majority of the patients sought treatment unusually soon after the onset of symptoms, 11 (50 per cent) presenting themselves within one month after onset, 17 (86 per cent) within six months and 19 (90 per cent) within a year. It would appear that these patients must have had an increased consciousness of the significance of vaginal bleeding, knowing that the source of menstruation had been removed. The average age of onset, 53.8 years, was somewhat higher than the average age of onset (46.4 years) in 227 unselected cases of carcinoma of the cervix other than stump carcinoma that have been followed in the Gynecology Tumor Conference. The youngest patient was 32 years old and the oldest 71 years, another illustration of the fact that carcinoma of the cervix may arise at any age. The high incidence of nulliparity in patients with carcinoma of the cervical stump has been emphasized by some.[5] Our incidence of 23 per cent nulliparity bears this out, but we feel that the role of nulliparity is a purely coincidental one, since many of the subtotal hysterectomies were done well before the end of the usual childbearing period and because the antecedent disease which was the indication for hysterectomy (fibroids, pelvic inflammatory disease, functional bleeding and others) would in some cases have precluded further pregnancies for a period of years before the hysterectomy was actually done. The initial clinical stages of the stump carcinoma patients were not notably different from those found in any other group of cervical carcinoma patients, but their later course was marked by a tendency toward increased invasion of the bladder floor and vaginal walls. The treatment in individual cases varied widely, making it impossible to compare results of one type of treatment with another in such a small series of cases; but of the eight patients treated more than five years previously, three, or 37.5 per cent, survived for at least five years.

Preinvasive carcinoma of the cervix, a condition which has been receiving much current emphasis, has a direct and possibly important relationship to the problem of carcinoma of the cervical stump. It has been determined that the average age of onset of preinvasive cervical carcinoma is as much as 10 to 12 years less than the average age of onset of invasive cervical carcinoma.[6] Furthermore, preinvasive cervical carcinoma gives rise to no specific symptomatology. In over half of the cases reported by Diddle and his associates.[7] the cervixes were of grossly normal appearance at the time the diagnosis of the preinvasive lesion was made. Since Younge, Hertig and Armstrong [8] have proved that some intraepithelial carcinomas become invasive in time, it is conceivable that an intraepithelial cervical carcinoma may have been present at the time the subtotal hysterectomy was performed in some of the patients in this group with carcinoma of the cervical stump.

REVIEW OF GROUP B

The 22 patients in group A, the previously discussed group, chanced to be the few patients among what must have been a great number of women undergoing subtotal hysterectomy in whom carcinoma developed in the cervical stump at a late date. Group B, on the other hand, is of considerably greater interest: it consists of the six cases of patients who underwent subtotal hysterectomy in the presence of what, in retrospect, was apparently clinically active carcinoma of the cervix. The group makes up 21.4 per cent of the total number of stump cases and 2.5 per cent of all the cervical carcinoma cases observed during the 10 year period. In five of the six cases the presenting symptom was vaginal bleeding, and in these five cases the vaginal bleeding was one of the indications—if not the chief indication—for the hysterectomy. Here the first definitive treatment for malignant disease of the cervix was supracervical hysterectomy. It is obvious that this was not treatment designed to remove cervical cancer; rather, it was treatment designed to remove a symptom—vaginal bleeding—gratuitously assumed to be of uterine origin. Because treatment was directed at a symptom rather than based on a specific and proved diagnosis, these patients were left in far worse straits than when they first sought medical care; and in some cases the actual diagnosis was not made until months had passed.

REPORT OF CASES

None of these women was first seen at the Ohio State University Hospital. Each was referred to the Gynecology Tumor Conference some time after the original operation had been performed. In reviewing these cases, however, the original pathology reports have been studied (as well as the tissue, whenever possible) together with as complete a copy of the record as could be obtained from the hospital of physician involved. The presentation of these case histories is pertinent because each represents errors in diagnosis and management of carcinoma of the cervix—errors which could have been prevented for the most part by proper evaluation of symptomatology, speculum examination of the cervix preoperatively, biopsy of any freely bleeding lesion and, perhaps in some cases, a preliminary diagnostic dilatation and curettage.

CASE 1.—The patient was a 41 year old bipara with a past history of bilateral salpingectomy and partial oophorectomy, followed two years later by drainage of an abdominal abscess. Intermenstrual vaginal bleeding and low abdominal pain began in September 1939. In January 1940 (four months later) she first consulted her local physician, who made a diagnosis of uterine fibroid and gave the patient "an unspecified amount of x-ray exposures to control hemorrhage, which it did, but she still complained of her severe pain." Six weeks later a supracervical hysterectomy was done. A section was taken, but carcinoma was not found. In May, three months after the hysterectomy, the patient had an exploratory laparotomy and attempted repair of an incisional hernia; pelvic adhesions and inflammatory material were found, and vaginal drainage was instituted. Again, no cancer was found upon microscopic examination of tissue, and the operative field had no appearance of cancer at either operation. At the patient's first visit to the Gynecology Tumor Conference of the Ohio State University Hospital, in September 1940, there was described "a wide open, irregular nodular cervical stump, semiulcerating, with a nodular condition in the outer and middle thirds of the vagina that was evidently metastatic involvement." Biopsy at that time showed epithelioma, grade 3 malignancy. The treatment at the University Hospital consisted first of drainage of a pelvic abscess, in an attempt to clear up the inflammatory process, followed by 2,250

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5. Watkins, R. E.: Northwest. Med. 40:172, 1941. Meigs.[24]

6. Graves, W. P.: Surg., Gynec. & Obst. 56:317, 1933. Pund, E. R., and Auerback, S. H.: Carcinoma of the Cervix, J. A. M. A. 131:960 (July 20) 1946.

7. Diddle, A. W.; Ashworth, C. R.; Brown, W. W., and Bronstad, M. T.: Am. J. Obst. & Gynec. 57:376, 1949.

8. Younge, P. A.; Hertig, A. T., and Armstrong, D.: Am. J. Obst. & Gynec. 58:867, 1949.

milligram-hours of radium in the region of the cervical canal as palliative therapy. In November a neoplastic vesicovaginal fistula developed, and the patient died Dec. 16, 1940, outside the hospital.

Comment.—(*a*) This patient received abdominal port x-ray treatments for alleged "uterine bleeding" without benefit of a preliminary dilatation and curettage to diagnose the type of endometrium from which she was bleeding. Apparently the x-ray therapy had some transient hemostatic effect, which, ironically, postponed the true diagnosis by at least six weeks. (*b*) In a rather extensive report on the patient's early treatment, no mention is made of the condition of the cervix. Judging by the far advanced cervical changes found at the Tumor Conference five months after the last operation, the cervix must have had a grossly neoplastic appearance before the first treatment was carried out. (*c*) The report states that sections were taken at each laparotomy, and no cancer was found. Failure to do a biopsy of the cervical lesion rather than one on the contents of the pelvis represents another neglected opportunity for proper diagnosis in this case. (*d*) In summary, this patient was treated energetically without a diagnosis from January until September, an eight month period, by all methods except the simplest methods (speculum examination and cervical biopsy), which would have made diagnosis easy.

CASE 2.—The patient was a 54 year old unipara, who had normal menopause at age 50. In November 1945 she began having postmenopausal bleeding, and two months later consulted her physician, who made a diagnosis of multiple uterine fibroids and did a subtotal hysterectomy and an appendectomy. The pathologist's report describes large leiomyomas, normal myometrium and hyperplastic endometrium. Vaginal bleeding continued, and in May 1946 a cervical biopsy specimen was taken which was said to have been lost before it could be examined microscopically. A new biopsy specimen was not secured until August, at which time the pathology report showed "epithelioma of cervix, grade 3." She came to the Ohio State University Hospital Gynecology Tumor Conference on Sept. 6, 1946, where the cervix was found to be replaced by an ulcerating, bleeding crater of neoplasm. In spite of treatment, the neoplasm extended rapidly out of the anterior vaginal wall and ultimately involved the vulva and inguinal nodes. She died of "generalized carcinoma," July 26, 1949, in another hospital. Permission for autopsy was not obtained.

Comment.—(*a*) This patient, four years postmenopausal, was treated for fibroids by subtotal hysterectomy, in spite of the well known fact that fibroids of themselves are rarely a cause of postmenopausal bleeding.[9] (*b*) Although it is almost certain that the cervical carcinoma was the cause of the initial bleeding in this case, no hint is given that a preoperative speculum examination of the cervix was carried out, and cervix biopsy was not done until four months after the patient first reported for treatment.

CASE 3.—The patient was a 46 year old nullipara who, after eight months of intermenstrual bleeding, consulted her physician in October 1941. She was advised to have an operation and was admitted to the hospital for that purpose; the admittance diagnosis listed on that hospital record is "uterine hemorrhage and appendicitis." Without a preliminary dilatation and curettage, a subtotal hysterectomy was first done; friable bleeding neoplasm was encountered, and so the cervical stump was also excised at the same operation. The operative note stated that the vaginal attachment was friable and tore easily. Apparently the cancer from inside the cervix had extended out to the area of attachment of the vaginal wall to the cervix. The appendix was then removed. The pathologist reported, in part, that the cervix was in two portions, one mass representing the cervica lips and the other half attached to the fundus. Completely infiltrating the cervix was an extensive friable carcinoma which produced vegetative masses on the cervical lips. The uteru measured 5 by 5 by 4 cm. and contained a few small fibromyomas. The microscopic diagnosis was squamous cell carcinoma of the cervix, grade 3, and chronic appendicitis. Th patient received two courses of high voltage x-ray therapy elsewhere, starting in May 1942, seven months after the operation and a third course at the University Hospital. She also ha 2,400 milligram hours of radium to the vagina. Initial exam nation at our Tumor Conference in October 1942, revealed generalized involvement of the vagina and urethra, togethe with a mass 9 cm. in diameter at the vaginal apex with bilatera extension and rectal involvement. The examiner at that tim described what "feels like cervix, with crater in center whic admits tip of examining finger." The disease progressed to fatal termination on March 8, 1943.

Comment.—(*a*) While this patient does not fall into the group of patients who were treated over a long period of time for carcinoma of the remaining stump, it is tru that she did have supracervical hysterectomy first and then received further treatment (i. e., excision of th stump) at the same operation. (*b*) She obviously did no have a speculum examination of the cervix at any tim preoperatively. By choice, a hysterectomy (in stages would not have been performed in the face of a grossl described appearance of "extensive friable carcinom which produces vegetative masses on the cervical lips, and which even involved the fornices at the time o operation. (*c*) No dilatation and curettage was deeme necessary to establish the cause of bleeding severe enoug to warrant hysterectomy. (*d*) Active neoplasm was cu across during the process of hysterectomy, making th prognosis far less favorable. (*e*) Seven months was allowed to elapse before the first irradiation therapy wa carried out.

CASE 4.—The patient was a 42 year old white septipara, who had a perfectly normal menstrual history until mid-Februar 1949, at which time she began having constant intermenstrua bleeding that steadily increased in amount. After a one month delay she consulted a physician, who did a speculum examination, admitted her to the hospital, "scraped the womb" unde anesthesia (by the patient's history) and reported that no furthe treatment was indicated. The curettings were not examined histologically, and no biopsy specimen was taken. After anothe month, during which she became so exsanguinated that sh was unable to climb a flight of stairs, she consulted a second physician, who, after speculum examination, told her that sh did not have a cancer but that she did need an abdominal operation. The patient was hospitalized with a chief complaint o "uterine hemorrhage," and a tentative diagnosis of possible cancer of the uterus. A cervical biopsy specimen was taken Apri 30. On May 2, one day before the pathology report on the cervical biopsy was returned, a supracervical hysterectomy, bilateral salpingectomy and right oophorectomy were done. The following day the pathologist reported the cervical biopsy as indicating squamous cell carcinoma, grade 3 malignancy. The pathology report from the abdominal operation revealed no malignancy of the fundus, tubes or right ovary.

During the same hospitalization the patient was given 7,000 milligram hours of radium against the cervix and in the fornices. She was offered no further therapy until five months later (October 1949), when she was first referred to the gynecology tumor clinic. Admittance examination revealed a large, irregu-

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9. (*a*) Davis, C. H.: Gynecology and Obstetrics, Hagerstown, W. F. Prior Company, Inc. 1934, vol. 2. (*b*) Te Linde, R. W.: Am. J. Surg. **48:** 289, 1940.

arly nodular cervix containing a central ulceration about 2.5 cm. n diameter and appearing grossly neoplastic. There was a mini- nal amount of extension bilaterally. Biopsy on admittance was reported to indicate squamous cell carcinoma, grade 3 malignancy. External irradiation of "200 roentgens to each of two pelvic ports was given, followed by intravaginal x-ray 5,000 roentgens to each lateral forniceal port." Treatment was completed in early December, at which time an examiner reported a mass of approximaetly 5 cm. in diameter attached to the top of the cervix, and definitely increased bilateral extension. Repeat biopsy November 15 showed undifferentiated carcinoma; biopsy of a freshly appearing growth on the posterior cervical lip in January 1950 was again reported as showing "undifferentiated carcinoma, grade 4." It was the impression of the Conference that the lesion had advanced in spite of, and even during the course of, vigorous therapy.

Comment.—(*a*) The patient's first physician had an excellent opportunity to start the patient well on the road toward control of her neoplasm within one month after the onset of symptoms. His procedure—speculum examination under anesthesia, dilatation and curettage—was faultless as far as it went; the failure to submit a tissue specimen to a pathologist for evaluation is difficult to understand. (*b*) The second physician's speculum examination and cervical biopsy provided all the needed ingredients for successful diagnosis—except the patience needed to wait one additional day for the pathology report, which would have changed the course of action completely. Inasmuch as a supravaginal hysterectomy was performed, it was obviously assumed that the patient's single symptom—vaginal hemorrhage—must be of uterine rather than cervical origin. Any serious consideration of the possibility of cervical malignant disease would certainly have dictated a different course of action. (*d*) The delay of five months between radium therapy and subsequent pelvic irradiation had two unfortunate consequences. First, with the five months loss in continuity of therapy, the local neoplasm which had been treated with radium became more radioresistant, reducing the effectiveness of further irradiation.[10] Second, with potential widespread seeding of neoplasm about the pelvis, there was a five month delay before any attempt was made to irradiate widely.

CASE 5.—The patient was a 65 year old nullipara who had entered the menopause at age 48. In January 1944, three months after the onset of vaginal bleeding, she was brought to University Hospital after an automobile accident. In the course of a routine work-up, there was discovered a cauliflower lesion involving the entire cervix, and a portion of the anterior and posterior vaginal wall, and bilateral adnexal thickening. Biopsy showed squamous cell carcinoma, grade 1 malignancy. The patient received 2,400 milligram hours of radium within the cervix as initial therapy, and then refused to go through with the further irradiation schedule which had been planned and did not appear for follow-up examination. Two years later, in April 1946, she was admitted to another hospital by a different physician with complaints of urinary incontinence, a recent 20 pound (9.1 Kg.) weight loss and a tender abdominal mass which had been present for the previous two weeks. Admittance examination described a semisolid movable tumor palpated in the abdomen, slightly tender to touch, about the size of a large grapefruit. On pelvic examination a slightly tender mass was felt in the posterior part of the vaginal vault that moved synchronously with the abdominal tumor. The impression was "uterine fibroid." At laparotomy the fundus was seen to be about the size of a four months' pregnancy. It was aspirated and 1 quart (950 cc.) of creamy purulent material was withdrawn. Subtotal hysterectomy was carried out, and Penrose drains thrust through into the vagina, after which a routine appendectomy was performed. The pathologist reported that all of numerous sections taken from the uterus showed low grade squamous cell carcinoma. At a second laparotomy, in May 1946 (to remove the cervical stump), there were such extensive adhesions that it was deemed inadvisable to proceed. Eighteen months after the last laparotomy, the patient reported back to the University Hospital gynecology tumor clinic for further care. By this time she had a frozen pelvis. She received external and intravaginal irradiation to tolerance. The disease progressed slowly from this time, and at the last report (January 1950) she was in near terminal condition at a rest home.

Comment.—(*a*) In this patient severe pyometra developed as a result of cervical stenosis resulting from intracervical radium therapy. Such a development, while regrettable, does occasionally follow the use of radium; it is ordinarily an easily managed complication, necessitating only one or more gentle cervical dilatations as treatment. (*b*) It is difficult to understand how the history of previous treatment for carcinoma was missed by at least four physicians directly responsible for the patient's care: the referring physician, the operating surgeon, the surgical resident and the intern. Even a single inquiry as to the presence of any postmenopausal bleeding by any one of the four physicians should have made it easy to elicit the carcinoma history. (*c*) The reason is equally obscure as to why a 68 year old patient, 20 years postmenopausal, should be hospitalized for "uterine fibroids" which had suddenly produced a tumor filling the pelvis. Hematometra from degeneration of a fibroid in a patient of this age would be a comparative rarity. (*d*) The operative approach is open to question. The treatment of a probable hematometra—even if such were the correct diagnosis—is not hysterectomy, either subtotal or total, at least until adequate vaginal drainage has been instituted. (*e*) An 18 months delay before resumption of irradiation therapy is to be regretted.

CASE 6.—The patient was a 45 year old quadripara, who consulted a physician in November 1948 because of steadily increasing intermenstrual bleeding. The physician told her she had "fibroid tumors" and advised that a laparotomy be done. She was hospitalized with an admittance diagnosis of "hyperplasia of the uterus," and treated by supracervical hysterectomy and appendectomy. No evidence of malignancy was found at operation. (No pelvic examination or preliminary dilatation and curettage was reported.) The pathologist noted "sclerotic type of chronic metritis and chronic appendicitis." Postoperatively, she continued to bleed in smaller amounts until a severe hemorrhage in October 1949 brought her back to her family physician, who did a pelvic examination and took a biopsy specimen of the cervix, obtaining a histological diagnosis of squamous cell carcinoma of the cervix. Treatment consisted of cervical cautery and three series of external irradiation, extending at intervals from October 1949 to March 1950. She first entered the gynecology tumor clinic on March 21, 1950, by which time the cervix was replaced by a necrotic ulcerating crater with obliteration of the vaginal fornices. There was extension of the neoplasm down the anterior vaginal wall and bilateral extension to the pelvic walls. Repeat biopsy at that time showed squamous cell carcinoma, grade 3 malignancy. She was treated at University Hospital by radioactive Cobalt needles implanted into the tumor.[11]

Comment.—In a patient with a chief complaint of intermenstrual bleeding, it must be assumed that the cervix, which had a gross carcinoma in October, 1949, had a clinically recognizable lesion 11 months previously at the time of supracervical hysterectomy. Eleven months loss of time resulted from failure critically to inspect and perform a biopsy on the cervix, and from the false assumption that removal of the uterine body would cure vaginal bleeding from any source.

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[10] Packard, C.: Science of Radiology, Springfield, Ill., Charles C Thomas, Publisher, 1933, p. 325.

[11] Barnes, A. C.; Morton, J. L., and Callendine, G. W.: To be published.

SUMMARY AND CONCLUSION

Of 28 patients with carcinoma of the cervical stump seen at the Gynecology Tumor Conference of the Ohio State University Hospital during a 10 year period, 22 had the onset of symptoms of cervical carcinoma more than five years following the performance of subtotal hysterectomy. The findings in the cases of these 22 patients agree basically with those reported in larger series.

Six cases of carcinoma of the cervical stump are presented in which the carcinoma was already present at the time of supracervical hysterectomy. Although none of these operations was done at the Ohio State University Hospital, examination of all the available operative records indicates that only one patient had the benefit of preoperative biopsy, and she was operated upon before the pathologist's report had been rendered.

In at least two of these cases the diagnosis was made by pathological examination of the subtotally removed uterus, indicating that active cervical neoplasm had been cut across in the course of the operation, thereby tending to promote wide and rapid spread of the neoplasm.

In three cases biopsy of the cervix was not done in spite of persistent postoperative bleeding until 3, 6 and 11 months, respectively, after the hysterectomy. In one case, although there was known to be residual carcinoma at the vaginal apex, no irradiation therapy was instituted until seven months after the operation.

The stated indication for operation in each case was either uterine hemorrhage or uterine fibroids. Fibroids entered into the preoperative diagnosis in five of the six cases. Although uterine fibroids rarely lead to uterine bleeding postmenopausally, one patient underwent subtotal hysterectomy as a result of this diagnosis without having had a cervical inspection.

The prevention of some of these surgical catastrophies could have been assured by simply a look at the cervix. Biopsy of the cervix is a simple office procedure, and it should be used liberally in order to make available a histological diagnosis of questionable cervical lesions by the time the patient is admitted to the hospital.

The routine employment of dilatation and curettage immediately prior to any pelvic laparotomy is too often neglected. This procedure can be accomplished with a minimum of time and effort at the time of preoperative catheterization. If dilatation and curettage had preceded laparotomy in these patients, there would have been an excellent chance in each case of making a correct tentative diagnosis prior to the laparotomy. If at that time inspection of the cervix did not lead to a biopsy of the lesion, then the free bleeding resulting from the cervical dilatation would have aroused the operator's suspicion.

In summary, these case histories reemphasize the fact that the first thought in the treatment of vaginal bleeding should be not hysterectomy but the accurate diagnosis of the primary pathology.

ABSTRACT OF DISCUSSION

Dr. Russell R. de Alvarez, Seattle: Dr. Hendricks has dem
onstrated that the patient is not alone responsible for delaye
and improper diagnosis of carcinoma of the cervix. In each
the six cases in group B presented here, errors of omission a
glaringly responsible for the status of these patients. Such tem
as hypermenorrhea, menomentrorrhagia and dysfunction
bleeding are meant to be applied only in cases in which the fin
ings on gynecologic examination are entirely normal. Countle
thousands of patients are being assigned these expansive dia
noses and treated from the office chair rather than as a result
evaluation in the examining room with the use of gloves a
speculum. While in the majority of the patients in Dr. He
dricks' series carcinoma developed in the cervical stump at a d
later than five years following a subtotal hysterectomy, the
seems to be little justification for performing incomplete surge
when morbidity and mortality are not increased by compl
surgical treatment of benign disease of the uterus. Prelimina
conization of the cervix is not the answer, since malignant
velopment is known to occur in that portion of the cervix remai
ing after conization. There should, therefore, be relatively f
reasons for not performing total hysterectomies in all patie
for whom removal of the uterus is indicated. In most instanc
subtotal hysterectomy implies the incapabilities of the occasior
operator and the lack of adequate training in gynecologic s
gery and anatomy. In the group B patients admitted to the Oh
State University Hospital, there seems to be no excuse for t
presence of existing active carcinoma of the cervix to have be
overlooked. Certainly the very essentials of diagnosis were
nored. All intermenstrual, postcoital, postmenopausal and po
hysterectomy bleeding must be considered as indicative of c
cinoma of the cervix until it is microscopically proved to
otherwise. At the University of Washington School of Medici
we require that every patient going to the operating room f
major gynecologic surgery shall undergo fractional curetta
any questionable lesion of the cervix will have been examin
histopathologically prior to the patient's going to surgery.
private hospitals the usual objection to such a procedure is th
it involves additional expense to the patient. It is possible to
cover early and even advanced carcinoma of the cervix wh
there are no suggestive symptoms. The commonest symptom
early carcinoma is "no symptom." Since symptoms alone do n
make diagnoses, examination of the pelvis is mandatory. No p
vic examination can be regarded as complete without visualiz
tion of the cervix. The patients in group A, in whom carcinon
of the cervical stump developed after a minimum of five yea
after incomplete surgery, clearly present the group for who
prophylactic removal of the cervix is indicated when total hy
terectomy is utilized in the treatment of benign uterine diseas
We have no way of knowing which cervixes will become signi
cantly changed. If we are to reduce the incidence of cervix ca
cer, we must not permit it to develop in the stump.

Dr. Chas. E. McLennan, San Francisco: I agree with D
Hendricks when he says that total removal of the uterus is su
gically feasible in practically all patients. The virtues of tot
hysterectomy as a routine procedure become more apparent aft
one sees in the pathological laboratory just a few uteri with u
suspected carcinoma of the cervix, not only of the *in situ*
preinvasive variety but sometimes carcinoma which is at lea
technically invasive. No longer is it sufficient merely to insp
a cervix grossly before operation and conclude that it m
safely be left in place because its distal surfaces do not appe
unusual. If for any reason the operator has decided in advan
that he wishes to perform a subtotal hysterectomy, it would see
wise to obtain preoperatively at least a sample of vaginal flu
for cytologic examination, and probably, in addition, biopsy m
terial obtained by endocervical curettage. In the event that u
foreseen circumstances lead to the performance of an unplann
subtotal hysterectomy, the cervical stump should be scrutinize
in similar fashion postoperatively just as soon as possible. R
garding Dr. Hendrick's smaller group of women in whom cerv
cal carcinoma presumably was present at the time subtotal hy
terectomy was done, one can only say it is most unfortunate th
we still encounter such diagnostic blunders. The fact that phys
cians repeatedly fail to inspect the cervix through a speculun

iring the course of an ordinary physical examination is bad iough, but the omission of this simple procedure prior to subtal removal of the uterus seems inexcusable. Whether this viotion of the rules of good practice has its basis in poor underaduate medical teaching or whether it stems from the comparae ease with which almost any casual operator can perform ibtotal hysterectomy is, perhaps, debatable. Each and every one us must act as a local policeman in forestalling the use of subtal hysterectomy as a solution for problems which are not ely to be helped by this maneuver.

Dr. Charles H. Hendricks, Columbus, Ohio: I should like express my thanks to Drs. de Alvarez and McLennan for their ioughtful discussion of this paper. In answer to the question as why we still advocate dilatation and curettage immediately rior to laparotomy, I think there are still legitimate reasons for arrying out this procedure. Perhaps the most important reason f all is to guarantee that someone looks at the cervix and looks t it critically. I do not think it is possible to expose the anterior ervical lip and draw the cervix down without looking at it careilly. There are certain cases in which dilatation and curettage nmediately prior to laparotomy might alter the decision as to e operation to be carried out, or even the operability of the patient. For example, the obtaining of grossly neoplastic tissue at curettage might alter the decision as to whether or not one should wait for a pathology report on the curettings before going ahead and considering the feasibility of surgery versus radiation. In another situation there is also the possibility that one might decide that a wrong diagnosis had been made previously and that laparotomy was not justified at all. This is the rare situation of a patient in whom the appearance of gross pus is not obtained until an actual dilatation of the entire cervical canal is carried out. In cases of pyometra the treatment is entirely finished from below in the estimation of most persons, at least, at that particular sitting. The whole purpose of presenting this paper has been to point out that present day knowledge regarding cancer prophylaxis and cancer control is not always being properly utilized. We feel that many (if not most) subtotal hysterectomies represent a failure to utilize good prophylaxis, since the cervix without the fundus is not a useful organ and may be removed without risk to the patient. A remaining cervical stump, however, presents a great hazard toward the development of carcinoma of the cervix. Again, subtotal hysterectomy in the presence of carcinoma of the cervix represents a failure to utilize the safeguards which have been set up to avoid such an unfortunate occurrence.

ACETYLSALICYLIC ACID INTOXICATION

A PROPOSED METHOD OF TREATMENT

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and
Henry Wishinsky, M.S., Washington, D. C.

Fatalities resulting from acetylsalicylic acid (aspirin) ntoxication are rare,[1] but when sufficient amounts are aken the drug is an effective suicidal agent. The exact ethal dose is unknown, but death has followed doses of as little as 2 Gm.[2] However, adults must ordinarily ingest 15 to 30 Gm. before a fatality will ensue. Salicylates nflict pathological lesions of an irreversible nature in the entral nervous system, and treatment, in the absence of a specific antidote, depends on rapid removal from the body. Normally, the kidney is the chief route of excretion. When suicidal amounts are ingested, severe renal impairment may occur, and this complication or the presence of antecedent renal disease imposes formidable obstacles to treatment.[3]

REPORT OF A CASE

A 39 year old white man was first admitted, in coma, to another hospital at 6:45 p. m. It was learned from his wife that he had consumed 140 five grain (0.30 Gm.) acetylsalicylic acid tablets that day, in addition to an unknown quantity during the preceding 24 hours. He was drenched with perspiration. The respirations, although only 26 per minute, were extremely deep. The tendon reflexes were absent, and the right pupil reacted sluggishly to light. The prothrombin time was 15.5 seconds, or 50 per cent prothrombin content. Because of the patient's moribund condition, he was transferred to Georgetown University Hospital for treatment with the artificial kidney. He arrived at this hospital about 11 p. m. on the same day, his condition remaining unchanged except for extreme restlessness. Lumbar puncture revealed clear fluid, and the electrocardiogram did not show any changes suggestive of alkalosis. He was given dextrose in water, ascorbic acid and vitamin K oxide before the artificial kidney was used. Great technical difficulty was encountered with the dialysis because of the patient's restlessness, and the procedure had to be terminated at the end of one hour. Barbiturates and paraldehyde were used in very small doses, since sedatives have been reported to potentiate the toxic effects of the salicylates on the central nervous system.[4] His condition remained critical; slight cyanosis appeared, and he died at 5 a. m. the following day, apparently of respiratory failure. Necropsy disclosed petechial hemorrhages throughout the cerebrum, brain stem, visceral peritoneum and mesentery. Further history obtained after the patient's death revealed that he had been consuming acetylsalicylic acid tablets by the boxful for the preceding 12 days. Signs and symptoms of salicylism had appeared three days prior to admission, when he began to complain of nausea, vomiting, tinnitus and deafness.

Despite the fact that only one hour of dialysis was accomplished, 1,300 mg. of salicylic acid were removed in the bath, the blood containing 55 mg. per 100 cc. Consequently, further test of the procedure appeared worth while. Salicylates were determined by the method of Keller with slight modifications.[5] The type of artificial kidney used was a modified Kolff model.[6]

Presented in part before the Southern Section of the American Federation for Clinical Research Jan. 26, 1951, New Orleans.

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RESULTS OF OTHER STUDIES

Two subjects, A and B, with normal renal function were given acetylsalicylic acid; the amount excreted over 24 hours is recorded in table 1. Two patients, C and D, with chronic renal disease subsequently treated with the artificial kidney, were given an identical quantity of acetylsalicylic acid; the amounts recovered in the bath are also recorded in table 1. All four subjects were given 4 Gm. of acetylsalicylic acid (3.07 Gm. of salicylic acid) orally. Results in control subject A demonstrate that the induction of a water diuresis does not increase the excretion of the drug. Almost as much in one patient—and actually more salicylate in the other patient—was recovered in the bath in three hours as was excreted by the control subjects in 24 hours. By four and one-quarter and five hours, respectively, definitely more was recovered in the bath than either control excreted in 24 hours. When the amount excreted by the control subjects over three and five hours is compared with the amount recovered in the bath over the same periods of time, i is seen that five to seven times more is removed by th artificial kidney. Table 2 shows the simultaneous arteria and venous concentrations of salicylate in the two patients given acetylsalicylic acid and treated with the artificial kidney. It demonstrates what one would expect namely, as the bath concentration rose, the extraction o salicylate from the arterial blood diminished. Clearanc calculations, with the use of the Fick principle, also demonstrate that salicylates are cleared by the artificial kidney more rapidly than by the normal kidney. Thes results present strong inferential evidence that the tota recoverability of a given dose of salicylate is greatly increased by early dialysis.

TABLE 1.—*Comparison of Salicylate Excretion by the Normal and the Artificial Kidney*

	Controls			Patients Subjected to Dialysis	
Time, Hr.*	Salicylate in Urine, Mg.	Percentage of Original Dose	Urine Vol., Cc.	Salicylate in Bath, Mg.	Percentage of Original Dose
Subject A				Subject C	
3	193.2	6.3	1,380	1,000	32.6
4.25	.....	...	.....	1,500	48.9
24	1,145.2	37.3	3,515	.....	....
Subject B				Subject D	
3	228.3	7.4	490	1,326	43.2
5	373.3	12.1	815	1,986	64.6
24	1,297.6	42.3	1,635	.....	....

* Refers to time after dialysis was begun. The acetylsalicylic acid had been ingested during the preceding 25 to 30 minutes. Also refers to the exact time after the drug had been ingested by the two normal subjects.

TABLE 2.—*Simultaneous Arterial and Venous Concentrations and Extractions of Salicylate During the Course of Dialysis*

Time, Min.*	Arterial Concentration, Mg./100 Cc.	Venous Concentration, Mg./100 Cc.	A-V Difference	Extraction, %	Salicylate in Bath, Mg.
Subject C					
15	5.0	1.69	3.33	66.6	...
30	6.89	3.56	3.33	48.3	200
60	10.4	6.51	3.89	37.4	340
120	11.0	7.8	3.2	29.1	600
180	10.3	7.6	2.7	26.2	1,000
Subject D					
15	2.8	1.2	1.6	57.1	100
30	10.0	7.1	2.9	29.0	200
60	12.1	8.9	3.2	26.4	370
120	12.6	10.6	2.0	15.9	894
180	10.8	8.9	1.9	17.6	1,326

* *Refers to time after dialysis was begun. Acetylsalicylic acid had been ingested during the preceding 25 to 30 minutes.*

Abel, Rowntree and Turner, in 1914, working wit dogs, demonstrated that salicylates could be remove rapidly by their original artificial kidney and suggeste its use in salicylate intoxication.[7] It was this work whic prompted our studies. At the time that dialysis wa undertaken, *we did not know that the patient had a subacute or chronic form of poisoning*. Results in this cas indicate that hemodialysis should be undertaken as earl as possible, for once the drug becomes "fixed" in th tissues the probability of recovery becomes less likely.

Lester, Lolli, and Greenberg,[8] working under differen experimental conditions, *found salicylates to be partiall* bound to plasma proteins and not dialyzable to any suc extent as reported by Abel or by us. The protein bindin *appears to be a loose one, obeying the law of mass actio*

As early as 1931 Karl Gebert [9] showed a decrease i arterial carbon dioxide and an increase in the alkalinity o *the blood after administration of 6 Gm. of sodium salicylate*. Rapoport and co-workers [10] made a comprehensiv study of the action of salicylates on the serum electrolyte and confirmed this fact. *Because of the Kussmaul-lik* respirations, this patient was considered on admission t have metabolic acidosis. This is a frequent misconception. *The carbon dioxide content of his blood was 52 volumes per cent (23.3 M/L)* and the arterial blood pH was 7.55. Later his carbon dioxide content fell to 33 volumes *per cent (14.8 m M/L) and the blood pH rose to 7.65.* I the initial carbon dioxide and pH are plotted on a nomogram of carbon dioxide partition in the plasma, a carbon *dioxide tension of approximately 27 mm. of mercury* is obtained. This plus the histological demonstration o central nervous system damage is corroborating evidence *that the hyperpnea induced by salicylates is central in* origin. Metabolic acidosis, due to glycogen depletion and the accumulation of acetone bodies, may develop secondarily.[11] The presence of vomiting with *inadequate* carbohydrate ingestion and renal impairment may be contributory factors.

The one electrocardiogram that was taken in our case did not show the low T waves or prolonged Q-T interval others have observed in association with salicylism and alkalosis.[12]

SUMMARY

A fatal case of acetylsalicylic acid intoxication with respiratory alkalosis is reported. Data showing that salicylates are removed much more rapidly by the artificial kidney than by the normal kidney are presented. Early treatment of severe acetylsalicylic acid intoxication with the artificial kidney is recommended.

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CLINICAL NOTES

PYELOGRAPHIC DEFORMITY PRODUCED BY A HEPATIC ABSCESS

William M. Coppridge, M.D.
Louis C. Roberts, M.D.
and
David A. Culp, M.D., Durham, N. C.

Filling defects in pyelograms are produced most frequently by renal tumors that arise from either the parenchyma or the pelvis. However, it is not uncommon for cysts, tuberculosis, nonopaque calculi, abscesses, blood clots or air bubbles to produce a roentgenological picture not unlike that of renal neoplasms. The urologist is aided materially in the diagnosis by the clinical picture, physical examination and laboratory tests.

Extrarenal diseases rarely produce pyelographic deformities. Perinephric abscesses, lipomas and retroperitoneal neoplasms occasionally produce abnormalities in the pyelogram either by invasion of or by pressure on the renal pelvis. Because of the close relationship of the surrounding viscera, it is theoretically possible for disease processes of the neighboring structures to produce pressure on the kidney and a filling defect in the pyelogram. Stone summarized nine cases of pancreatic cysts that simulated renal disease, one of which he observed personally. A report follows of a case in which extrarenal disease located in the liver produced a deformity in the pyelogram by pressure on the kidney. As far as could be determined, this is the only case reported in the literature.[1]

REPORT OF CASE

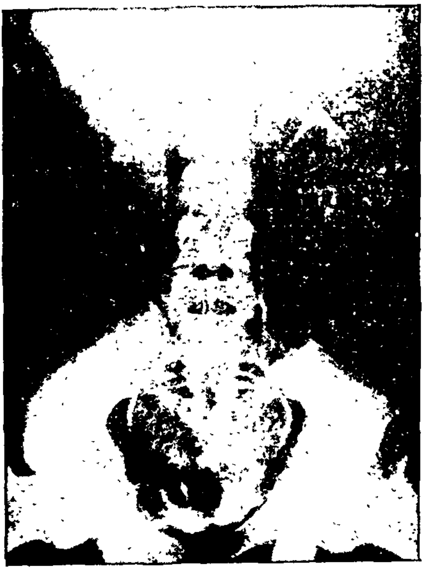
On Nov. 23, 1949, L. J. was admitted to the medical service of Watts Hospital with the chief complaint of pain in the right flank. Six weeks prior to admission he had noticed the gradual onset of an ache in the lower right portion of the chest, right flank and right upper quadrant of the abdomen. It remained localized to this area without radiation to the shoulder or along the course of the ureter. Accompanying the onset of pain the patient experienced chills, fever and general malaise. He consulted his family physician, who prescribed 400,000 units of penicillin daily for two weeks and extensive sulfadiazine therapy. There was no improvement, and a cough productive of yellowish sputum developed. During the following weeks the patient became progressively worse and was then admitted for further study and treatment.

During World War II he had served in the U. S. Army, but all of his service was within the limits of the United States, principally in California. Recently, he had sustained lacerations of both forearms, which healed by primary intention. On physical examination the patient was found to be a chronically ill, weak, white male in acute distress. The temperature was 99.4 F., pulse rate 100 per minute, respirations 20 per minute and blood pressure 112/70. There was tenderness in the right flank and right upper quadrant of the abdomen. The liver, spleen and kidneys were not palpable. The admission diagnosis was pneumonitis and secondary anemia.

Following admission the patient's temperature ranged from 100 to 103 F. He was given sulfonamide and penicillin therapy without improvement. A white blood cell count was 14,800. Results of urinalysis were negative. A chest roentgenogram was normal. The sedimentation rate on two occasions was 36 mm. in one hour. Several examinations of the sputum were negative for tubercle bacilli. On the fifth hospital day a urological consultation was secured. Cystoscopy showed a normal bladder. The left retrograde pyelogram was normal, while on the right a filling defect involving the middle and lower calyces was found. The impression at this time was that the patient had a destructive lesion of the right kidney, probably an abscess. Urine culture was positive for hemolytic Staphylococcus albus (urea-splitting), while blood cultures were negative. Stool examinations on two occasions showed no amebas or ova.

The patient was given large doses of penicillin with only slight clinical improvement, and courses of streptomycin, aureomycin and chloramphenicol (chloromycetin®) failed to change the course of the disease. Repeated studies by intravenous urograms and retrograde pyelograms showed no change in the filling defect in the right kidney.

Exploration of the right kidney was decided on, with the preoperative diagnosis of (1) renal abscess, (2) perinephric abscess, (3) renal tumor and (4) renal tuberculosis. A right lumbar incision was made, and an adherent mass encountered. At first this was thought to be the kidney, but further dissection revealed the kidney to be displaced upward and backward. It was otherwise apparently normal. The mass was intraperitoneal and attached to the liver. By blunt dissection the mass was isolated and found to be a liver abscess that was filled with a moderate amount of purulent material. The abscess was opened, drained and packed with iodoform gauze. The incision was closed in layers, and two tissue drains, as well as the packing in the abscess, were left in place. Cultures and microscopic examination of the purulent material were negative for bacteria and parasites. The patient's temperature returned to normal in four days, and on the ninth postoperative day he was discharged in good condition. The final diagnosis was hepatic abscess.



Bilateral retrograde pyelogram, showing filling defect in middle and lower calyx of right kidney.

111 Corcoran Street, Durham, N. C.

From the Urological Department of Watts Hospital, Durham, N. C.

[1] Since the preparation of this paper, Dr. Theodore Yates, of the Veterans Hospital in Columbia, S. C., has provided us with short abstracts and the roentgenograms of two similar cases.

Curling's Ulcer.—In 1832, 10 years before Thomas Curling's report appeared, Dupuytren reported on changes in the intestinal canal which follow burns. Violent congestion, severe gastroenteritis and more or less deep ulceration was described. The term "Curling's ulcer" was adopted because of the large number of cases he collected. . . . Numerous theories of the aetiology of Curling's ulcer have been advanced, but that most widely accepted is a local thrombosis which is the result of toxaemia and sepsis associated with the burn.—M. R. Mynhardt, *South African Medical Journal*, Feb. 17, 1951.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

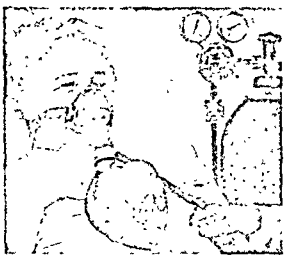
The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

HOWARD A. CARTER, *Secretary.*

RESP-AID OXYGEN MASK, MODEL 300, ACCEPTED

Manufacturer: Respiration Aids, Inc., 220 East Second Street, New York 9.

The Resp-Aid Oxygen Mask, Model 300, is a device for use in the therapeutic administration of oxygen. It is designed to minimize resistance to inspiration and expiration and at the same time to control, by the setting of an injector, the concentration of oxygen in the mask. It is fastened over the patient's nose and mouth by means of a band passing about the head. A reservoir bag attached to the mask receives a steady flow of oxygen from the tank, delivers part of its contents into the mask when the patient inhales, and is reinflated during the periods of exhalation.



Resp-Aid Oxygen Mask, Model 300

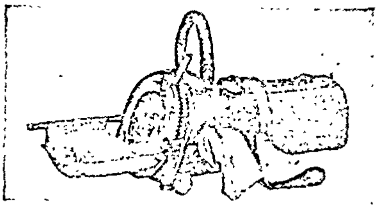
The device weighs 370 Gm. with the meter which attaches to the gas cylinder. Packed for shipping it makes a package measuring 10 by 18 by 25 cm. (4 by 7 by 10 in.) and weighing 750 Gm. (1 lb. 10½ oz.). The foreign shipping weight is 1.4 Kg. (3 lb. 1½ oz.).

Evidence from acceptable sources showed that the device worked as claimed by the manufacturer. The Council on Physical Medicine and Rehabilitation voted to include the Resp-Aid Oxygen Mask, Model 300, in its list of accepted devices.

CHESTPIRATOR PORTABLE RESPIRATOR, JUNIOR HOSPITAL MODEL, ACCEPTED

Manufacturer: Fabrikators Inc. of Massachusetts, 19 Walnut Street, Boston 32.

The Junior Hospital Model of the Chestpirator is a smaller form of the apparatus already accepted by the Council for use on adult patients. The smaller model operates on the same principles as the larger, but the shipping weight of the chest piece is only 18 Kg. (40 lb.) and that of the power plant is only 27 Kg. (60 lb.). It takes 2½ amperes of current or 275 watts of power on 60 cycle alternating current at 110 volts; motors are also available for the following types of current: Alternating current: 50 cycle single phase at 220 volts and 50 cycle single phase at 110 volts. Direct current: 115 volts and 24 volts.



Chestpirator Portable Respirator
Junior Hospital Model

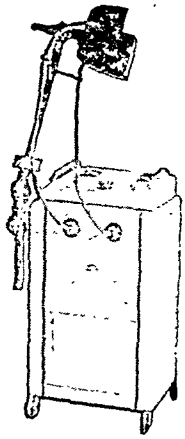
Evidence was obtained from sources acceptable to the Council that this device satisfied the published requirements of the Council for respirators of the cuirass type. The Council on Physical Medicine and Rehabilitation voted to include the Chestpirator Portable Respirator, Junior Hospital Model, in its list of accepted devices.

MEDITHERM, MODEL 1600-A, ACCEPTED

Manufacturer: Dallons Laboratories, 5066 Santa Monica Boulevard, Los Angeles 27.

The Meditherm, Model 1600-A, is a short wave diathermy apparatus. It is housed in a cream-colored enamelled metal cabinet which rolls on casters on the floor. Unpacked, the apparatus measures 98 (height) by 59 by 45 cm. (38½ by 23¼ by 17¾ in.) and weighs 57 Kg. (125 lb.). Packed for domestic shipment it makes a package measuring 97 by 53 by 71 cm. (38 by 21 by 27¾ in.) and weighing 70.5 Kg. (155 lb.). The foreign shipping weight is the same. The shipping weights include the No. 1601 hinged treatment drum, two cuff electrodes measuring 18 by 25 cm. (7 by 10 in.), the adjustable arm for use with the hinged drum, two spare fuses, a line cord, and a set of operating instructions.

Evidence was obtained from acceptable sources that the device was satisfactory in construction and operation. It is listed with the Underwriters' Laboratories and bears the Federal Communications Commission type approval number D-518.



Meditherm, Model 1600-A

The Council on Physical Medicine and Rehabilitation voted to include the Meditherm, Model 1600-A, in its list of accepted devices with the understanding that this acceptance does not extend to the pad applicators.

COUNCIL ON FOODS AND NUTRITION

ACCEPTED FOODS

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Reid Murdoch & Company, Division of Consolidated Grocers Corporation, Chicago.

MONARCH BRAND DIETETIC PACK FRUITS FOR SALAD. Ingredients: Apricots, peaches, pears, maraschino type cherries and pineapple, packed in water without any added sugar or salt.

Analysis (submitted by manufacturer).—Available carbohydrates (total carbohydrate minus crude fiber) 10.0%, fat (ether extract) 0.2%, protein (N × 6.25) 0.8%, ash (minerals) 0.2%, sodium 4.6 mg./100 Gm., potassium 57.0 mg./100 Gm.

Calories.—0.45 per gram; 12.8 per ounce.

Use.—For use in calory-restricted, low sodium and other therapeutic diets.

ACCEPTED JUICES

To encourage the production of fruit juices containing high natural levels of vitamin C, the Council on Foods and Nutrition accepts canned orange juice in which there is at least 40 mg. of ascorbic acid per 100 ml. of reconstituted juice at the time of packing.

The following products have been accepted by the Council and permission to use its Seal has been granted.

JAMES R. WILSON, M.D., *Secretary.*

Florida Citrus Canners Cooperative, Lake Wales, Fla.

DONALD DUCK FROZEN CONCENTRATED ORANGE JUICE.

PRICELESS FROZEN CONCENTRATED ORANGE JUICE.

These products are vacuum packed in 6 ounce metal containers for household use and in 32 ounce metal containers for institutional use. The vitamin C content of the 1949-1950 pack as supplied by the manufacturer averaged 50.4 mg. per 100 ml.

HOSPITAL SERVICE IN THE UNITED STATES

THIRTIETH ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

By F. H. Arestad, M.D. and Mary A. McGovern

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The present report on Hospital Service in the United States represents the 1950 annual census of hospitals registered by the American Medical Association. Again a new high has been reached in the utilization of hospital service as the report shows a total of 17,023,513 patients admitted in 1950 compared with 16,659,973 in the previous year. The rate of admission, therefore, may be represented as 1 new patient every 1.8 seconds. The number of hospital births, which decreased by 4,985, showed a total of 2,815,806 or 1 live baby every 11.2 seconds. The bed capacity, now listed at 1,456,912, is an increase of 17,882 in the last year while the average daily census of 1,242,777 represents a gain of 17,826. This tremendous volume of hospital service is likewise reflected in the total of 453,613,605 patient days reported in 1950.

The current report for 1950 contains (1) a complete list of all hospitals registered by the American Medical Association in accordance with standards prepared by the Council on Medical Education and Hospitals and officially adopted by the House of Delegates; (2) special symbols designating the hospitals approved by the American Medical Association for the training of interns and resident physicians, the hospitals accredited by the American College of Surgeons as meeting unconditionally the requirements for general standardization and hospitals conducting schools of nursing education or affiliated training programs accredited by the respective state boards of nurse examiners; (3) statistical and textual material giving information on the number, size and classification of hospitals, bed capacity, number of patients admitted, hospital births, percentage of bed occupancy, average daily census and total patient days; (4) information on professional and auxiliary nursing personnel, schools of nursing education and student enrolment; (5) lists and general information on technical schools approved by the American Medical Association in cooperation with agencies representing the fields of medical technology, x-ray technic, physical therapy, occupational therapy and medical record library science; (6) data on surgical procedures, x-ray and laboratory services and outpatient departments; (7) information on general practice sections in hospitals and (8) a report on the number and types of hospitals currently utilizing the Standard Nomenclature of Diseases and Operations.

The preparation of this report has been made possible only through the active cooperation of the hospitals represented. For this generous support the Council on Medical Education and Hospitals wishes to express its gratitude to the medical departments of the Army, Air Force, Navy, U. S. Public Health Service, Veterans Administration, the Federal Security Agency and to all hospital administrators and others who have assisted in the present survey.

SUMMARY OF HOSPITAL DATA—1950

All Registered Hospitals		General Hospitals	
Number	**6,430**	**Number**	**4,713**
Bed capacity	**1,456,912**	**Bed capacity**	**587,917**
Bassinets	**89,200**	**Bassinets**	**85,582**
Patients admitted	**17,023,513**	**Patients admitted**	**15,830,170**
Births	**2,815,806**	**Births**	**2,739,212**
Average daily census	**1,242,777**	**Average daily census**	**433,364**
Patient days	**453,613,605**	**Patient days**	**158,177,860**

Scope of Survey

Included in the present report are 6,430 hospitals in the United States, 25 in Alaska, 6 in the Canal Zone, 2 in Guam, 51 in Hawaii, 45 in Puerto Rico and 4 in the Virgin Islands. While all of these appear in the registered list the statistical report, itself, is limited solely to the 6,430 hospitals located within the Continental United States. The registered list contains 1,292 hospitals approved by the American Medical Association for the training of interns and/or resident physicians. In this total 824 are approved for internships and 1,102 offer residency training on an approved basis. A more detailed report on these educational programs will appear in the Internship and Residency Number of THE JOURNAL, Sept. 29, 1951. By special symbols the list also designates 2,742 hospitals as fully accredited under the general standardization program of the American College of Surgeons and shows 1,106 hospitals with accredited professional schools of nursing aside from the 220 which offer acceptable affiliated training.

TABLE A.—*Summary of Growth of Hospitals, 1909 to 1950*

Year	Federal Hospitals Number	Federal Hospitals Capacity	State Hospitals Number	State Hospitals Capacity	All Other Hospitals Number	All Other Hospitals Capacity	Total Number	Total Capacity
1909	71	8,827	232	189,049	4,056	223,189	4,359	421,065
1914	93	12,692	294	232,834	4,650	287,045	5,047	532,481
1918	110	18,815	303	262,254	4,910	331,182	5,323	612,251
1923	220	53,869	601	302,208	6,009	399,645	6,830	755,722
1928	294	61,765	595	369,759	5,963	461,410	6,852	892,934
1931	291	69,170	576	419,282	5,746	485,663	6,613	974,115
1932	301	74,151	568	442,601	5,693	497,602	6,562	1,014,354
1933	295	75,635	557	459,646	5,585	491,765	6,437	1,027,046
1934	313	77,865	544	473,035	5,477	497,201	6,334	1,048,101
1935	316	83,353	526	483,994	5,404	507,792	6,246	1,075,139
1936	323	84,234	524	503,306	5,342	509,181	6,189	1,096,721
1937	329	97,951	522	508,913	5,277	517,684	6,128	1,124,548
1938	330	92,248	523	541,279	5,313	527,853	6,166	1,161,380
1939	329	96,338	523	569,575	5,374	538,113	6,226	1,195,026
1940	336	108,928	521	572,079	5,434	545,238	6,291	1,226,245
1941	428	179,202	530	600,320	5,400	544,859	6,358	1,324,381
1942	474	220,938	530	606,437	5,341	556,452	6,345	1,383,827
1943	827	476,673	531	610,115	5,297	562,466	6,655	1,649,254
1944	798	551,135	539	609,025	5,274	569,785	6,611	1,729,945
1945	705	546,384	549	619,612	5,257	572,918	6,511	1,738,914
1946	464	264,486	557	628,363	5,259	575,865	6,280	1,468,714
1947	401	213,204	563	626,648	5,312	585,370	6,276	1,425,222
1948	372	185,098	567	648,386	5,396	590,036	6,335	1,423,520
1949	361	182,254	573	656,611	5,638	600,165	6,572	1,439,030
1950	355	186,793	552	665,019	5,523	605,100	6,430	1,456,912

Changes, corrections and additions have been made in the registered list up to the date of publication and, therefore, totals derived from the list, itself, may show slight variations from those presented in the tables of the statistical report.

TABLE B.—*Number of Hospitals According to Size*

Bed Capacity	General Hospitals	Nervous and Mental	Tuberculosis	Other Hospitals	Total Number
25 and under	1,028	28	24	152	1,232
26-50	1,132	71	61	205	1,469
51-100	1,008	80	120	180	1,388
101-200	809	48	91	101	1,049
201-300	353	22	54	35	464
301 and over	383	330	81	34	828
Totals	4,713	579	431	707	6,430

Number, Size and Classification of Hospitals

In the report of last year the number of registered hospitals was 6,572. Subsequently 318 new registrations were recorded but in the same period the listing of 161 hospitals was discontinued chiefly through the closing of individual institutions. As a result of these changes and additions the number of registered hospitals initially considered in the present survey was 6,729. However, only 6,430 are included in the current statistical repo inasmuch as 299 hospitals failed to return the annual census questionnaires prepared by the Council on Medical Education and Hospitals in collaboration with the hospital division of the American College of Surgeons. While this latter group represents approximately 4 per cent of the registered hospitals, its volume of service is about 1.5 per cent as evidenced by the combined report of 19,000 beds in 1949, 260,000 admissions and an average daily census of 14,000.

Table B gives a breakdown of the registered hospitals according to size. While fewer hospitals are represented in each group the size variations have not been altered to any appreciable extent. Thus, as in the previous report, 64 per cent of the registered hospitals have 100 beds or less, 23 per cent have 101-300 beds and 13 per cent have 300 beds or over. The general hospitals follow practically the same pattern, but in the fields of psychiatry and tuberculosis the larger types of institutions predominate. Only 32 per cent of the general hospitals have more than 100 beds whereas the corresponding ratios in the psychiatric and tuberculosis institutions are 70 and 55 per cent respectively.

TABLE C.—*Summary of Hospital Service Classified by Control*

	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
Governmental						
Federal	355	186,793	2,419	1,127,937	145,397	61,938
State	552	665,019	2,034	791,863	632,283	62,918
County	572	103,826	5,186	970,463	86,825	151,139
City	363	69,731	5,675	1,181,415	57,809	182,343
City-county	70	11,672	1,299	245,692	9,147	43,814
Total governmental	1,912	1,037,041	16,613	4,317,370	931,461	502,152
Nongovernmental						
Church	1,097	150,078	27,736	4,944,745	114,992	949,955
Nonprofit associations	2,072	218,788	36,040	6,309,157	163,093	1,126,353
Total nonprofit	3,169	368,866	63,776	11,253,902	278,085	2,076,308
Individual and partnership	958	26,561	5,321	774,937	15,944	128,101
Corporations (profit unrestricted)	391	24,444	3,490	677,304	17,287	109,245
Total proprietary	1,349	51,005	8,811	1,452,241	33,231	237,346
Total nongovernmental	4,518	419,871	72,587	12,706,143	311,316	2,313,654
Total all hospitals	6,430	1,456,912	89,200	17,023,513	1,242,777	2,815,806

TABLE D.—*Summary of Hospital Data According to Type of Service*

	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
General	4,713	587,917	85,582	15,830,170	433,364	2,739,212
N & M	579	711,921	221	307,165	687,567	91
Tuberculosis	431	85,746	89	113,275	72,370	3,38
Maternity	92	4,699	2,994	102,147	3,060	70,91
Industrial	27	2,661	31	58,180	1,807	86
E. E. N. T.	51	2,560	3	113,951	1,483	.....
Children's	44	5,087	138	129,784	3,401	.....
Orthopedic	86	6,963	25	35,223	5,526	
Isolation	44	8,554	77	135,877	4,036	3
Conv. and rest	113	6,415	4	33,860	4,529	6
Institutions	178	18,547	30	123,854	11,806	34
All other hospitals	72	15,812	6	40,027	13,828	
Total all hospitals	6,430	1,456,912	89,200	17,023,513	1,242,777	2,815,80

The classification of hospitals by control is shown in table C. Here it will be found that 1,912 or 29.7 per cent of the registered hospitals operate under governmental control whereas 4,518 or 70.3 per cent are in the nongovernmental group. By further reference to table E it may be noted that 52 per cent of the governmental hospitals are general in type while 19 per cent operate as psychiatric institutions, 17 per cent as tuberculosis hospitals and 12 per cent under other classifications. In all of the governmental divisions the general hospitals constitute the largest group except in the state classification where approximately 51 per cent of the hospitals are devoted to psychiatric care and only 10 per cent to general hospitalization.

In the nongovernmental section 2,072 hospitals are listed as nonprofit associations while 1,097 other nonprofit hospitals are classified as church related. Together these two groups constitute 70 per cent of the nongovernmental institutions and 49 per cent of all registered hospitals. The proprietary nongovernmental hospitals consist of 391 corporations unrestricted as to profit and 958 hospitals operating under individual or partnership control. Of the 4,518 nongovernmental hospitals 82 per cent are general in type, 5 per cent are psychiatric, 2 per cent are classified under tuberculosis and 11 per cent appear in other categories. This, it will be noted, is in marked contrast with the governmental group.

Table E.—*Governmental and Nongovernmental Hospital Service*

	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
Governmental						
General	999	232,226	15,788	3,700,597	171,799	488,012
N & M	360	691,412	188	231,940	670,578	386
Tuberculosis	323	75,448	87	99,662	63,868	3,382
Other special	64	11,679	520	162,682	6,205	10,143
Institutions	166	26,276	30	122,489	19,011	229
Total governmental	1,912	1,037,041	16,613	4,317,370	931,461	502,152
Nongovernmental						
General	3,714	355,691	69,794	12,129,573	261,565	2,251,200
N & M	219	20,509	33	75,225	16,939	561
Tuberculosis	108	10,298	2	13,613	8,502	6
Other special	393	25,260	2,752	446,340	17,637	61,770
Institutions	84	8,113	6	41,392	6,623	117
Total nongovernmental	4,518	419,871	72,587	12,706,143	311,316	2,313,054
Total all hospitals	6,430	1,456,912	89,200	17,023,513	1,242,777	2,815,806

Table F.—*Summary of Federal Hospital Service in the United States According to Type of Service and Governmental Agencies Concerned from the 1950 Census of Hospitals Registered by the American Medical Association*

Type	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
U. S. Army						
General	42	24,716	812	230,777	14,976	22,825
U. S. Air Force						
General	29	4,438	332	69,381	2,000	6,234
U. S. Navy						
General	31	20,121	753	177,569	11,827	22,790
U. S. Public Health Service						
General	20	5,384	51	63,262	4,315	1,093
N & M	2	2,400	...	5,799	2,205	......
TB	2	592	...	651	453	......
	2	1,068	13	16,066	310	4
	16	1,334	6	9,531	713	11
Totals	42	10,778	70	95,309	7,996	1,108
Veterans Administration						
General	92	50,889	...	425,534	39,327	2
N & M	35	54,676	...	44,488	51,955	1
TB	19	9,334	...	20,006	7,232	1
Totals	146	114,899	...	490,028	98,514	4
Indian Affairs						
General	51	2,346	374	46,720	1,476	6,052
TB	4	656	...	1,991	543	......
Institutions	3	113	...	928	22	......
Totals	58	3,115	374	49,639	2,041	6,052
Other Federal						
General:	3	585	67	11,042	472	2,920
N & M	1	6,590	11	1,648	6,587	5
Institutions	3	1,551	...	2,544	984	......
Totals	7	8,726	78	15,234	8,043	2,925
Total all Federal Hospitals	355	186,793	2,419	1,127,937	145,397	61,938

Table G.—*Summary of Hospital Service in the United States According to Type of Service and Agencies Concerned from the 1950 Census of Hospitals Registered by the American Medical Association*

Type	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
U. S. Totals	6,430	1,456,912	89,200	17,023,513	1,242,777	2,815,806
Federal						
General	268	108,479	2,389	1,024,285	74,393	61,916
N & M	38	63,666	11	51,935	60,747	6
TB	25	10,582	.....	22,648	8,228	1
Other Special	2	1,068	13	16,066	310	4
Institutions	22	2,998	6	13,003	1,719	11
Totals	355	186,793	2,419	1,127,937	145,397	61,938
State						
General	56	21,465	1,777	400,473	16,441	61,286
N & M	280	602,191	167	170,912	585,216	380
TB	84	26,960	7	25,096	22,529	59
Other Special	26	5,928	66	108,550	3,852	980
Institutions	106	8,475	17	86,832	4,245	213
Totals	552	665,019	2,034	791,863	632,283	62,918
County						
General	325	45,827	4,770	910,785	34,673	141,962
N & M	41	25,455	10	8,719	24,580	......
TB	177	25,370	7	26,783	21,913	30
Other Special	8	1,013	398	14,766	397	9,147
Institutions	21	6,161	1	9,410	5,262	......
Totals	572	103,826	5,186	970,463	86,825	151,139
City						
General	294	46,916	5,578	1,124,523	38,845	179,034
N & M	1	100	.....	374	35	......
TB	25	10,608	73	23,209	9,654	3,292
Other Special	26	3,465	18	20,065	1,490	12
Institutions	17	8,642	6	13,244	7,785	5
Totals	363	69,731	5,675	1,181,415	57,809	182,343
City-County						
General	56	9,539	1,274	240,531	7,447	43,814
N & M	...	....	.....	....	......	......
TB	12	1,928	.....	1,926	1,544	......
Other Special	2	205	25	3,235	156	......
Institutions	...	....	.....	....	......	......
Totals	70	11,672	1,299	245,692	9,147	43,814
Church						
General	981	140,106	26,521	4,871,295	107,323	924,017
N & M	21	3,229	.....	7,999	2,755	......
TB	15	1,749	.....	2,163	1,494	......
Other Special	68	3,705	1,209	60,089	2,408	25,821
Institutions	12	1,289	6	3,199	1,012	117
Totals	1,097	150,078	27,736	4,944,745	114,992	949,955
Nonprofit						
General	1,682	179,882	34,758	5,926,931	132,726	1,095,502
N & M	44	7,369	6	14,666	6,360	1
TB	69	7,306	2	9,475	5,968	6
Other Special	217	17,722	1,274	326,017	12,631	30,844
Institutions	60	6,509	.....	32,068	5,408	......
Totals	2,072	218,788	36,040	6,309,157	163,093	1,126,353
Individual and Partnership						
General	771	19,324	5,160	714,622	10,545	123,972
N & M	75	3,914	5	20,314	3,035	......
TB	18	742	.....	1,198	588	......
Other Special	87	2,463	156	36,370	1,712	4,129
Institutions	7	118	.....	2,433	64	......
Totals	958	26,561	5,321	774,937	15,944	128,101
Corporations						
General	280	16,379	3,355	616,725	10,971	107,709
N & M	79	5,997	22	32,246	4,839	560
TB	6	501	.....	777	152	......
Other Special	21	1,370	113	23,864	886	976
Institutions	5	197	.....	3,692	139	......
Totals	391	24,444	3,490	677,304	17,287	109,245
Total all Hospitals	6,430	1,456,912	89,200	17,023,513	1,242,777	2,815,806

From a numerical point of view, as well as in the number of patients admitted, the general hospitals constitute by far the largest group. It has 4,713 or 73 per

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: A. GOVERNMENT HOSPITALS

Marginal No.		Federal					State					County					City					City-County					Total Governmental					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	7	4,046	32	16,842	3,552	10	9,026	99	35,266	8,319	5	349	20	3,689	297	4	320	67	13,101	191	8	851	178	32,125	512	31	11,502	396	101,023	12,901	1
2	Arizona	17	1,996	83	20,510	1,190	3	1,650	...	1,451	1,613	8	867	67	14,299	672	2	33	8	723	7	..	.....	...	.....	...	30	4,516	158	30,983	3,782	2
3	Arkansas	5	4,311	13	24,127	2,809	4	6,553	38	11,334	6,581	3	115	26	1,434	33	6	309	92	15,209	188	..	.....	...	.....	...	18	11,288	169	52,104	9,701	3
4	California	27	18,784	325	112,369	13,178	17	40,689	35	31,278	38,269	56	21,206	783	233,535	17,540	3	80	26	3,778	48	3	2,263	51	22,392	2,306	106	83,022	1,220	133,352	71,341	4
5	Colorado	7	4,205	31	24,019	3,386	8	6,847	42	8,090	6,360	7	298	70	11,635	199	1	90	16	3,540	62	1	196	30	7,796	357	21	11,936	102	55,080	10,364	5
6	Connecticut	3	417	...	5,378	308	14	13,088	6	7,610	12,839	..	.....	...	.....	.....	3	487	14	4,533	267	..	.....	...	.....	...	20	13,992	20	17,521	13,414	6
7	Delaware	1	300	...	1,160	200	6	2,928	7	1,461	2,597	..	.....	...	.....	.....	..	.....	...	.....	.....	..	.....	...	.....	...	7	3,228	7	2,921	2,797	7
8	District of Columbia	7	9,713	113	31,089	9,467	..	.....	...	.....	.....	..	.....	...	.....	.....	3	2,533	129	20,166	2,051	..	.....	...	.....	...	10	12,246	212	51,255	11,518	8
9	Florida	11	3,026	145	33,750	1,936	9	9,297	14	11,058	8,302	13	1,611	222	46,808	1,182	10	1,137	222	39,052	769	3	182	31	4,851	110	46	15,253	634	135,522	12,299	9
10	Georgia	8	3,341	52	28,921	2,789	6	12,860	14	35,874	12,762	13	1,234	237	47,519	883	5	840	107	31,051	600	9	787	171	32,559	500	41	19,062	581	175,924	17,531	10
11	Idaho	1	263	...	1,995	217	5	2,035	...	1,629	1,884	8	315	102	10,651	189	1	24	5	667	10	1	30	10	.....	...	16	2,607	117	14,912	2,300	11
12	Illinois	9	10,331	62	59,777	8,206	22	48,611	38	34,136	45,616	29	7,818	293	81,396	6,674	22	2,927	235	39,760	2,306	..	.....	...	.....	...	82	69,687	628	215,069	62,802	12
13	Indiana	5	2,855	...	8,664	2,524	15	12,592	71	18,461	11,521	40	3,014	484	73,535	2,379	4	789	94	13,346	615	..	.....	...	.....	...	64	19,250	649	111,006	17,039	13
14	Iowa	2	2,029	...	6,424	2,024	12	11,406	60	22,884	10,817	9	624	51	7,829	423	10	362	98	14,816	250	..	.....	...	.....	...	33	14,421	209	51,953	13,514	14
15	Kansas	7	3,541	45	30,272	2,690	11	8,527	46	13,227	7,952	12	431	112	11,452	282	11	423	124	15,885	298	2	48	11	1,232	28	43	12,970	341	72,068	11,250	15
16	Kentucky	8	5,101	39	[illegible]	4,411	10	8,919	23	7,652	8,035	4	265	39	3,875	204	5	319	79	13,056	223	3	949	57	16,159	764	30	15,553	237	70,100	13,637	16
17	Louisiana	6	2,693	15	[illegible]	1,952	12	13,788	432	116,813	11,839	..	.....	...	.....	.....	1	100	...	374	35	..	.....	...	.....	...	19	16,581	447	133,194	13,826	17
18	Maine	2	919	...	[illegible]	841	6	4,616	2	1,348	4,332	..	.....	...	.....	.....	3	204	36	3,367	164	..	.....	...	.....	...	11	5,769	38	8,596	6,337	18
19	Maryland	7	4,563	87	[illegible]	3,889	14	11,044	85	16,435	10,643	3	179	44	6,141	127	2	1,968	80	7,701	1,398	1	218	50	7,526	184	27	17,972	316	77,131	16,241	19
20	Massachusetts	10	7,210	52	[illegible]	5,921	28	33,763	50	16,987	31,981	8	1,342	...	1,344	1,074	25	6,299	527	87,958	4,788	..	.....	...	.....	...	71	48,614	629	134,326	43,764	20
21	Michigan	8	5,595	10	[illegible]	3,504	18	26,310	86	28,963	24,636	27	10,731	84	26,933	10,160	38	4,797	649	137,881	4,232	..	.....	...	.....	...	91	47,433	829	208,821	42,532	21
22	Minnesota	6	2,533	22	[illegible]	2,329	17	13,400	41	18,171	12,619	15	1,604	30	6,093	1,323	29	1,536	302	36,170	975	3	970	67	8,077	659	70	20,013	462	84,291	17,905	22
23	Mississippi	5	2,258	26	[illegible]	1,875	10	7,310	48	38,094	6,822	7	307	72	7,338	113	3	118	33	4,295	57	4	219	65	8,605	145	29	10,212	244	71,545	9,012	23
24	Missouri	7	3,164	9	[illegible]	2,053	15	16,255	28	8,784	15,477	7	546	82	11,119	362	13	5,294	293	59,263	4,437	..	.....	...	.....	...	42	25,259	412	94,419	22,329	24
25	Montana	5	413	27	[illegible]	278	2	2,185	...	897	2,090	4	258	21	1,004	150	..	.....	...	.....	.....	..	.....	...	.....	...	11	2,856	48	7,663	2,518	25
26	Nebraska	6	736	20	[illegible]	321	9	7,050	15	7,386	6,548	5	445	44	10,879	315	5	124	32	1,988	57	..	.....	...	.....	...	24	8,355	111	26,360	7,241	26
27	Nevada	4	202	20	[illegible]	164	1	370	...	155	366	5	473	71	10,964	323	..	.....	...	.....	.....	..	.....	...	.....	...	10	1,045	91	14,907	853	27
28	New Hampshire	1	245	10	[illegible]	87	3	3,467	...	1,118	3,324	3	166	25	2,314	102	2	104	21	3,184	60	..	.....	...	.....	...	9	3,982	56	8,215	3,573	28
29	New Jersey	4	3,035	69	[illegible]	2,908	14	19,426	5	7,622	18,700	22	10,762	387	19,015	8,924	8	3,260	60	43,301	2,583	..	.....	...	.....	...	48	36,483	521	84,229	33,115	29
30	New Mexico	9	1,065	31	[illegible]	878	5	1,453	11	2,546	1,390	3	160	47	2,426	39	2	95	19	4,465	66	1	23	7	342	11	20	2,796	115	18,826	2,384	30
31	New York	20	16,179	70	[illegible]	13,599	50	108,370	71	40,662	106,654	29	5,249	150	42,745	4,426	46	22,228	892	306,492	22,147	..	.....	...	.....	...	145	152,026	1,183	457,733	146,826	31
32	North Carolina	6	3,724	72	[illegible]	2,142	13	12,270	2	8,780	11,158	22	1,434	186	26,780	1,014	3	437	89	15,291	334	2	145	37	3,543	109	46	18,010	386	80,216	14,757	32
33	North Dakota	6	619	27	[illegible]	313	3	3,600	2	825	3,379	..	.....	...	.....	.....	4	64	17	1,723	32	..	.....	...	.....	...	13	4,283	46	8,330	3,724	33
34	Ohio	6	5,043	...	[illegible]	4,365	25	34,328	36	23,623	32,088	26	4,144	152	22,839	3,592	18	3,538	363	67,255	2,759	1	72	22	4,029	72	76	47,125	573	137,066	42,876	34
35	Oklahoma	12	1,465	116	[illegible]	1,074	14	11,090	57	19,991	10,343	4	192	43	3,692	67	15	607	177	24,403	336	..	.....	...	.....	...	45	13,354	393	71,613	11,820	35
36	Oregon	3	1,203	5	[illegible]	1,069	6	5,272	31	10,047	4,957	5	240	48	5,933	120	3	171	20	2,333	38	..	.....	...	.....	...	17	6,886	104	25,559	6,184	36
37	Pennsylvania	11	8,729	52	[illegible]	6,529	39	51,169	208	52,076	47,570	11	3,097	...	3,189	2,798	6	3,896	101	23,530	2,621	1	56	...	70	50	68	66,947	361	114,366	59,568	37
38	Rhode Island	3	1,072	37	[illegible]	800	4	5,741	24	2,440	5,250	..	.....	...	.....	.....	1	265	...	3,124	131	..	.....	...	.....	...	8	7,078	61	17,628	6,181	38
39	South Carolina	4	2,478	46	[illegible]	1,438	4	7,433	7	10,046	7,031	15	1,698	245	44,484	1,183	2	267	42	8,506	148	2	362	36	13,683	311	27	12,238	376	97,268	10,111	39
40	South Dakota	9	1,331	43	[illegible]	1,084	4	2,916	...	954	2,589	2	56	18	1,415	25	2	68	17	2,301	40	..	.....	...	.....	...	17	4,371	78	11,421	3,738	40
41	Tennessee	7	4,822	26	[illegible]	3,878	11	8,123	4	5,635	7,808	9	2,335	79	10,323	1,856	5	1,087	156	35,110	862	6	1,218	159	21,402	859	38	17,585	424	104,755	15,263	41
42	Texas	21	12,646	210	[illegible]	8,904	19	17,759	41	32,741	19,750	51	2,088	496	68,328	1,102	14	749	160	29,704	461	16	2,487	262	53,908	1,912	121	35,729	1,169	270,550	32,159	42
43	Utah	2	228	6	[illegible]	168	3	2,115	...	713	1,985	4	312	59	6,735	209	2	31	14	1,043	15	..	.....	...	.....	...	11	2,686	79	11,930	2,377	43
44	Vermont	1	250	...	[illegible]	205	5	1,597	...	1,018	1,815	..	.....	...	.....	.....	..	.....	...	.....	.....	..	.....	...	.....	...	6	1,817	...	4,915	2,020	44
45	Virginia	13	7,176	193	[illegible]	5,123	14	14,757	181	40,720	14,230	1	25	5	850	11	4	559	28	5,507	468	1	36	12	1,514	18	33	22,553	419	104,822	19,850	45
46	Washington	15	5,377	128	[illegible]	4,027	8	9,318	14	6,300	8,651	16	3,157	72	22,803	2,662	..	.....	...	.....	.....	1	226	18	4,331	160	40	18,078	232	73,027	15,500	46
47	West Virginia	3	1,236	6	[illegible]	985	12	6,525	30	9,385	6,124	3	110	15	2,480	91	3	373	74	13,297	292	..	.....	...	.....	...	21	8,244	125	32,198	7,492	47
48	Wisconsin	5	2,876	19	[illegible]	2,360	9	6,024	30	18,893	5,605	51	13,891	81	31,680	13,254	13	804	153	23,056	382	1	34	22	945	20	79	23,629	305	85,020	21,621	48
49	Wyoming	4	1,419	22	[illegible]	1,057	3	1,147	...	284	1,062	7	678	124	22,960	446	1	15	4	110	6	..	.....	...	.....	...	15	3,259	150	32,707	2,571	49
	Totals (1950)	355	186,793	2,419	1,127,937	145,397	532	665,019	2,034	791,863	632,283	572	103,826	5,186	970,463	86,825	363	69,731	5,675	[illegible]	57,809	70	11,672	1,299	[illegible]	9,147	1,912	[illegible]	[illegible]	4,317,370	931,461	
	(1949)	361	182,254	2,432	1,164,096	144,950	573	656,611	2,105	791,671	618,614	561	103,209	4,801	898,955	85,650	373	71,779	5,877	[illegible]	58,160	69	11,302	1,170	[illegible]	8,469	1,937	[illegible]	[illegible]	4,258,785	915,843	
	(1948)	372	185,098	2,343	1,185,874	147,159	567	648,386	2,056	817,630	611,410	530	101,327	4,397	851,655	82,460	368	73,797	5,867	[illegible]	58,075	63	11,159	1,094	[illegible]	8,465	1,900	[illegible]	[illegible]	4,290,491	907,569	
	(1947)	401	213,204	2,444	1,285,126	168,133	563	626,648	1,932	737,402	585,747	526	101,402	4,352	784,499	82,568	369	78,184	5,968	[illegible]	60,498	58	10,767	1,028	[illegible]	7,657	1,917	[illegible]	[illegible]	4,201,344	904,603	
	(1946)	464	264,486	2,692	1,949,711	213,246	557	628,363	1,876	648,538	579,782	514	102,071	4,315	704,772	79,758	363	76,534	5,836	[illegible]	57,283	64	11,280	1,009	[illegible]	7,863	1,962	[illegible]	[illegible]	4,598,163	937,932	
	(1945)	705	546,384	3,923	4,047,949	391,935	549	619,642	1,746	559,352	580,783	508	102,121	4,294	614,468	77,510	359	77,365	5,657	[illegible]	56,418	62	11,206	966	[illegible]	7,768	2,183	[illegible]	[illegible]	6,399,113	1,114,414	
	(1944)	798	551,135	3,462	4,287,271	303,875	539	609,025	1,690	556,224	570,441	504	102,544	3,889	571,581	77,856	365	79,687	5,491	[illegible]	57,417	56	9,887	757	[illegible]	6,594	2,262	[illegible]	[illegible]	6,545,220	1,016,183	
	(1943)	827	476,673	2,396	4,032,607	268,746	531	610,115	1,623	543,258	571,576	511	100,151	3,763	581,706	77,789	354	77,879	5,215	[illegible]	57,848	61	11,321	842	[illegible]	7,773	2,284	[illegible]	[illegible]	6,202,827	983,732	
	(1942)	474	220,938	1,206	1,675,722	147,094	530	606,437	1,618	601,481	566,457	505	98,997	3,512	606,390	76,948	354	79,252	4,847	[illegible]	60,982	61	10,157	645	[illegible]	7,157	1,924	[illegible]	[illegible]	4,009,675	858,638	
	(1941)	428	179,202	1,006	1,268,112	118,890	530	600,320	1,572	620,231	561,620	512	98,227	3,288	643,740	83,214	337	78,060	5,015	[illegible]	61,019	57	9,702	583	[illegible]	7,149	1,804	[illegible]	[illegible]	3,662,602	831,892	
	(1940)	336	108,928	1,089	557,137	86,604	521	572,079	1,347	583,274	539,994	514	102,340	3,097	615,247	87,029	332	79,045	4,390	[illegible]	63,644	64	11,297	636	[illegible]	7,401	1,767	[illegible]	[illegible]	2,869,004	784,672	
	(1939)	329	96,338	823	477,417	80,692	523	560,575	1,234	588,997	527,900	501	100,976	2,748	589,280	86,177	320	77,231	4,210	[illegible]	61,766	67	10,026	589	[illegible]	7,513	1,740	[illegible]	[illegible]	2,734,375	761,048	
	(1938)	330	92,248	772	445,891	75,470	523	541,279	1,127	549,637	512,839	490	96,621	2,581	552,066	80,262	317	75,180	4,089	[illegible]	61,006	68	9,808	512	[illegible]	7,110	1,728	[illegible]	[illegible]	2,607,280	730,687	
	(1937)	329	97,951	734	439,480	80,819	522	508,913	1,111	511,809	485,891	484	93,379	2,641	549,332	80,575	324	79,368	3,937	[illegible]	64,928	63	9,138	499	[illegible]	6,667	1,722	[illegible]	[illegible]	2,509,925	718,880	
	(1936)	323	84,234	675	426,570	68,752	524	503,306	1,130	534,652	478,778	484	87,541	2,388	497,706	76,277	332	78,950	3,947	[illegible]	65,508	61	9,809	496	[illegible]	7,520	1,724	[illegible]	[illegible]	2,452,859	696,835	
	(1935)	316	83,353	604	382,980	64,795	526	483,994	1,186	513,345	462,070	490	90,904	2,375	476,275	79,280	328	73,322	3,742	[illegible]	60,751	64	10,139	510	[illegible]	8,025	1,721	[illegible]	[illegible]	2,293,052	674,921	
	(1934)	313	77,865	560	324,354	58,209	544	473,035	1,154	474,539	447,014	496	83,919	2,404	453,425	71,157	328	71,931	3,680	[illegible]	59,891	68	11,138	518	[illegible]	8,729	1,719	[illegible]	[illegible]	2,150,065	645,000	

cent of all hospitals registered by the American Medical Association. Next in size is the psychiatric division which represents only 579 institutions yet has a greater bed capacity than is found in any other group. The tuberculosis sanatoriums total 431 whereas the other sections listed in table D vary in number from 27 to 178. Changes in the number of hospitals since 1909 are shown in table A. Further reference should also be made to table F showing the classification of federal hospital services, and table G which summarizes the statistical data on all registered hospitals in accordance with type of service and control.

Bed Capacity

Comparative Totals
1949: 1,439,030
1950: 1,456,912

Reference to table A will show that the highest bed capacity was recorded in 1945 when a total of 1,738,944 beds were reported. In the next three years the number declined to 1,423,520 but a gain of 15,510 beds occurred in 1949 with a further increase of 17,882 in 1950. The present total of 1,456,912 beds includes 1,037,041 or 71.2 per cent in governmental hospitals and 419,871

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: B. NONPROFIT ORGANIZATIONS

Marginal No.		Church Related (Nonprofit)					Nonprofit Associations					Total Nonprofit					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	10	1,129	202	40,752	783	16	1,584	233	36,474	1,085	26	2,713	435	77,226	1,868	1
2	Arizona	7	1,012	171	39,310	795	20	1,050	161	25,578	613	27	2,062	332	64,888	1,408	2
3	Arkansas	10	1,180	200	46,427	897	13	938	156	26,725	518	23	2,118	356	73,152	1,415	3
4	California	52	7,505	1,562	297,306	6,075	97	10,144	1,584	342,462	7,652	149	17,649	3,146	639,768	13,727	4
5	Colorado	31	3,240	564	113,790	2,444	29	2,195	188	37,033	1,445	60	5,435	752	150,823	3,889	5
6	Connecticut	7	1,891	275	59,368	1,492	37	6,325	945	170,956	4,854	44	8,216	1,220	230,324	6,346	6
7	Delaware	1	115	30	2,984	66	7	1,121	181	31,298	767	8	1,236	211	34,282	833	7
8	District of Columbia	5	1,333	224	45,213	897	9	1,736	320	53,241	1,275	14	3,069	544	98,454	2,172	8
9	Florida	11	1,507	325	45,665	890	36	2,505	438	68,045	1,503	47	4,012	763	113,710	2,393	9
10	Georgia	6	784	113	27,642	606	24	2,237	367	78,269	1,630	30	3,021	480	105,911	2,236	10
11	Idaho	12	985	244	36,624	688	10	403	111	6,075	159	22	1,388	355	42,699	847	11
12	Illinois	91	14,449	2,487	439,278	11,323	114	12,985	2,209	386,414	9,811	205	27,434	4,696	825,692	21,134	12
13	Indiana	29	5,183	1,033	185,351	4,093	22	1,833	351	64,846	1,369	51	7,016	1,384	250,197	5,462	13
14	Iowa	45	5,552	958	179,245	4,373	24	1,238	311	45,208	961	69	6,790	1,269	224,453	5,334	14
15	Kansas	40	4,010	779	135,389	3,131	23	1,083	208	31,447	816	63	5,093	987	166,836	3,947	15
16	Kentucky	21	2,647	457	93,045	2,029	34	2,298	358	.69,063	1,481	55	4,945	815	162,108	3,510	16
17	Louisiana	15	2,117	394	81,273	1,550	24	1,968	277	61,502	1,223	39	4,085	671	142,775	2,773	17
18	Maine	7	546	100	17,923	433	30	2,024	411	61,095	1,396	37	2,570	511	79,018	1,829	18
19	Maryland	9	1,815	236	46,207	1,407	35	5,008	650	111,303	3,826	44	6,823	886	157,510	5,233	19
20	Massachusetts	19	3,310	745	89,560	2,572	108	11,957	2,085	325,844	8,818	127	15,267	2,830	415,404	11,390	20
21	Michigan	36	5,296	1,235	205,061	4,279	95	9,491	1,651	303,111	7,374	131	14,787	2,886	508,172	11,653	21
22	Minnesota	39	4,638	807	166,500	3,811	74	4,777	901	151,465	3,604	113	9,415	1,708	317,965	7,415	22
23	Mississippi	6	727	111	30,551	567	32	1,454	320	60,076	892	38	2,181	431	90,627	1,459	23
24	Missouri	40	6,614	1,134	192,883	5,462	41	4,006	579	101,594	3,150	81	10,620	1,713	294,477	8,612	24
25	Montana	25	2,275	419	68,369	1,461	11	482	117	14,783	294	36	2,757	536	83,152	1,755	25
26	Nebraska	36	3,174	607	97,837	2,275	18	846	211	26,673	576	54	4,020	818	124,510	2,851	26
27	Nevada	2	132	28	5,462	98	2	50	15	1,246	27	4	182	43	6,708	125	27
28	New Hampshire	4	438	81	13,464	327	23	1,578	347	48,721	1,005	27	2,016	428	62,185	1,332	28
29	New Jersey	17	3,727	592	100,261	2,556	80	10,400	1,853	278,434	7,940	97	14,127	2,445	378,695	10,496	29
30	New Mexico	15	964	217	32,922	676	6	320	40	6,930	161	21	1,284	257	39,852	837	30
31	New York	70	12,365	1,939	291,035	9,110	217	36,231	4,752	864,766	28,034	287	48,596	6,691	1,155,801	37,144	31
32	North Carolina	12	1,402	323	51,628	1,103	88	7,183	1,389	265,806	4,909	100	8,585	1,712	317,434	6,012	32
33	North Dakota	27	1,996	416	70,187	1,368	10	601	118	17,900	397	37	2,597	534	88,087	1,765	33
34	Ohio	51	9,081	1,572	316,576	7,506	91	10,704	1,937	380,265	8,539	142	19,785	3,509	696,841	16,045	34
35	Oklahoma	15	1,747	377	62,602	1,330	16	1,025	177	36,232	686	31	2,772	554	98,834	2,016	35
36	Oregon	19	2,578	512	95,481	1,969	16	944	158	29,268	678	35	3,522	670	124,749	2,647	36
37		37	6,188	1,115	152,209	4,659	209	31,584	5,172	855,690	25,085	246	37,772	6,287	1,007,899	29,744	37
38		3	445	60	8,286	338	13	1,885	365	53,818	1,487	16	2,330	425	62,104	1,825	38
39		6	652	134	24,747	503	20	2,038	352	69,771	1,439	26	2,690	486	94,518	1,942	39
40	South Dakota	20	1,790	354	54,245	1,261	14	896	145	26,501	603	34	2,686	499	80,746	1,864	40
41	Tennessee	14	2,224	343	88,077	1,688	24	2,230	350	65,338	1,650	38	4,454	693	153,415	3,338	41
42	Texas	57	6,456	1,302	285,332	4,798	81	4,747	640	138,966	2,739	138	11,203	1,942	424,298	7,537	42
43	Utah	10	1,416	359	51,661	989	6	185	73	7,063	117	16	1,601	432	58,724	1,106	43
44	Vermont	2	290	49	8,847	209	19	1,919	267	38,845	1,466	21	2,209	316	47,692	1,675	44
45	Virginia	3	299	61	8,329	191	41	4,036	824	145,103	2,860	44	4,335	885	153,432	3,051	45
46	Washington	24	3,128	681	117,423	2,336	41	3,584	738	127,846	2,583	65	6,712	1,419	245,269	4,919	46
47	West Virginia	10	1,339	258	51,927	1,086	18	1,977	271	54,444	1,374	28	3,316	529	106,371	2,460	47
48	Wisconsin	63	8,255	1,496	264,437	6,417	50	2,827	695	100,795	2,155	113	11,082	2,191	365,232	8,572	48
49	Wyoming	6	132	55	6,054	75	4	156	39	4,829	67	10	288	94	10,883	142	49
	Totals (1950)	1,097	150,078	27,736	4,914,745	114,992	2,072	218,788	36,040	6,309,157	163,093	3,169	368,866	63,776	11,253,902	278,085	
	(1949)	1,090	146,315	27,664	4,738,992	114,408	2,067	213,576	35,565	6,089,085	159,560	3,157	359,891	63,229	10,848,077	273,968	
	(1948)	1,068	144,036	27,045	4,719,967	115,225	2,016	208,936	34,990	5,933,318	159,825	3,084	352,972	62,635	10,653,285	275,050	
	(1947)	1,051	141,920	27,145	4,524,859	118,780	1,965	202,661	34,110	5,652,649	158,835	3,016	344,581	61,255	10,177,508	277,615	
	(1946)	1,050	138,096	26,256	4,098,042	115,358	1,942	198,885	33,120	5,100,117	153,580	2,992	336,981	59,376	9,198,159	268,938	
	(1945)	1,036	135,481	25,465	3,887,100	110,557	1,954	195,805	32,497	4,745,712	147,694	2,990	331,286	57,962	8,632,812	258,251	
	(1944)	1,020	133,090	24,948	3,707,991	105,940	1,961	195,624	31,854	4,596,048	144,328	2,981	328,714	56,802	8,304,039	250,268	
	(1943)	1,004	130,488	24,007	3,503,396	101,150	1,952	192,219	30,731	4,456,274	140,095	2,956	322,707	54,738	7,959,670	241,245	
	(1942)	977	126,141	22,262	3,211,162	94,521	1,919	190,150	29,154	4,252,486	141,633	2,926	316,291	51,416	7,463,648	236,154	
	(1941)	993	123,331	20,145	2,961,591	90,195	1,917	182,140	26,422	3,931,141	132,472	2,910	305,471	46,567	6,892,735	222,667	
	(1940)	998	120,809	18,561	2,679,876	85,007	1,903	177,681	24,978	3,574,974	125,757	2,901	298,490	43,539	6,254,850	210,764	
	(1939)	1,001	120,740	18,044	2,682,762	81,984	1,839	172,765	23,371	3,503,488	119,342	2,840	293,505	41,415	6,186,250	201,326	
	(1938)	981	119,521	17,320	2,531,796	80,576	1,776	169,980	22,523	3,316,310	117,558	2,757	289,501	39,843	5,848,106	198,134	
	(1937)	975	115,283	16,851	2,495,114	79,113	1,718	162,474	21,511	3,201,042	114,508	2,693	277,757	38,362	5,696,156	193,621	
	(1936)	969	113,288	16,360	2,286,064	74,037	1,742	162,586	21,238	2,972,708	107,510	2,711	275,854	37,598	5,258,772	181,547	
	(1935)	970	113,208	16,033	1,950,308	69,592	1,670	155,300	20,119	2,527,207	98,088	2,640	268,568	36,152	4,477,515	167,680	
	(1934)	970	113,263	16,067	1,786,522	63,851	1,676	154,449	20,184	2,377,213	93,216	2,646	267,712	36,251	4,163,735	157,067	
	(1933)	984	115,840	16,190	1,733,565	63,621											
	(1932)	1,001	117,555	16,125	1,918,214	70,119											
	(1931)	1,011	116,935	15,861	2,013,352	73,911											
	(1930)	1,017	116,846	15,615	....	75,162											
	(1929)	1,024	113,555	15,037	....	75,770											
	(1928)	1,056	114,613	13,190	....	......											
	(1927)	1,060	108,582	......	....	73,813											

—28.8 per cent—in the nongovernmental group. The bed capacity in the various governmental divisions range from 11,672 in the city-county group to 665,019 in the state hospitals where 602,191 beds are devoted to psychiatric care. In the federal classification, as shown in table F, the combined capacity is 186,793 including 114,899 in the hospitals operated by the Veterans Administration. The largest segment of the nongovernmental group, the church hospitals and other nonprofit associations, has a total capacity of 368,866 beds whereas the individual and partnership hospitals can now accommodate 26,561 patients and the corporations unrestricted as to profit 24,444. Within the nongovernmental division 84 per cent of the beds are devoted to general hospitalization while in the governmental hospitals the corresponding ratio is 22 per cent. In contrast it may be noted that over 66 per cent of the governmental beds are utilized for psychiatric care whereas less than 5 per cent are similarly assigned in the nongovernmental group.

The general hospitals, as a group, have 587,917 beds or 40 per cent of the total capacity of all registered hospitals. Further reference to tables E and G shows that the governmental general hospitals reported 232,226 beds in 1950, the nongovernmental 355,691. In the psychiatric

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: C. PROPRIETARY

Marginal No.		Individual and Partnership					Corporations (Profit Unrestricted)					Total Proprietary					TOTAL NONGOVERNMENTAL Totals of Tables 1B and 1C					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	33	1,105	244	38,035	617	14	867	190	30,326	498	47	1,972	434	68,361	1,115	73	4,685	869	145,587	2,983	1
2	Arizona	10	223	43	4,365	72	..	...	...	.....	...	10	223	43	4,365	72	37	2,285	375	69,253	1,480	2
3	Arkansas	25	704	184	31,034	296	..	...	...	.....	...	25	704	184	31,034	296	48	2,822	540	104,186	1,711	3
4	California	71	2,586	328	62,496	1,918	51	2,675	368	82,971	1,919	122	5,261	696	145,467	3,837	271	22,910	3,842	785,235	17,564	4
5	Colorado	9	372	35	4,993	292	4	164	16	3,297	130	13	536	51	8,290	422	73	5,971	803	159,113	4,311	5
6	Connecticut	1	42	...	234	40	7	488	...	1,039	359	8	530	...	1,273	399	52	8,746	1,220	231,597	6,745	6
7	Delaware	..	...	...	.....	.....	1	15	6	320	7	1	15	6	320	7	9	1,251	217	34,602	840	7
8	Dist. of Columbia	..	...	...	.....	.....	1	237	61	9,298	212	1	237	61	9.298	212	15	3,306	605	107,752	2,384	8
9	Florida	27	728	155	21,122	357	9	656	112	15,598	236	36	1,384	267	36,720	593	83	5,396	1,030	150,430	2,986	9
10	Georgia	36	1,039	190	33,822	550	11	429	90	17,872	263	47	1,468	280	51.694	813	77	4,489	760	157,605	3,049	10
11	Idaho	8	198	47	7,163	109	1	29	8	1,207	16	9	227	55	8,370	125	31	1,615	410	51,069	972	11
12	Illinois	32	1,112	61	11,704	799	15	1,155	68	18,935	865	47	2,267	129	30,639	1,664	252	29,701	4,825	856,331	22,798	12
13	Indiana	12	299	62	11,025	202	4	418	20	11,813	257	16	717	82	22,838	459	67	7,733	1,466	273,035	5,921	13
14	Iowa	23	511	138	15,518	338	4	155	32	3,959	116	27	666	170	19,477	454	96	7,456	1,439	243,930	5,788	14
15	Kansas	14	318	67	6,639	176	..	...	...	.....	...	14	318	67	6,639	176	77	5,411	1,054	173,475	4,123	15
16	Kentucky	15	356	85	10,097	165	8	395	63	11,949	266	23	751	148	22,046	431	78	5,696	963	184,154	3,911	16
17	Louisiana	43	969	254	39,366	497	11	474	62	16,052	265	54	1,443	316	55,418	762	93	5,528	987	198,193	3,535	17
18	Maine	4	96	38	2,199	60	2	71	14	2,132	50	6	167	52	4,331	110	43	2,737	563	83,349	1,939	18
19	Maryland	7	275	8	1,881	206	3	169	12	2,392	104	10	444	20	4,273	310	54	7,267	906	161,783	5,543	19
20	Massachusetts	5	146	20	2,658	93	16	767	110	16,403	551	21	913	130	19,061	614	148	16,180	2,960	434,465	12,034	20
21	Michigan	21	529	98	9,269	390	7	362	...	3,362	290	28	891	98	12,631	680	159	15,678	2,984	520,803	12,333	21
22	Minnesota	16	282	82	6,126	165	10	852	17	24,301	639	26	1,134	99	30,427	804	139	10,549	1,807	348,392	8,219	22
23	Mississippi	20	611	116	19,461	282	2	69	15	3,011	45	22	680	131	22,472	327	60	2,861	562	113,099	1,786	23
24	Missouri	21	598	140	19,210	407	9	394	139	7,994	263	30	992	279	27,204	670	111	11,612	1,992	321,681	9,282	24
25	Montana	4	96	18	2,913	50	2	142	26	4,130	97	6	238	44	7,043	147	42	2,995	580	90,195	1,902	25
26	Nebraska	28	565	184	18,914	304	5	235	39	3,736	166	33	800	223	22,650	470	87	4,820	1,041	147,160	3,321	26
27	Nevada	1	50	12	1,903	29	..	...	...	.....	...	1	50	12	1,903	29	5	232	55	8,611	154	27
28	New Hampshire	..	...	...	.....	.....	1	45	...	94	37	1	45	...	94	37	28	2,061	428	62,279	1,369	28
29	New Jersey	4	113	10	981	75	7	362	7	1,247	254	11	475	17	2,228	329	108	14,692	2,462	380,923	10,825	29
30	New Mexico	2	28	3	395	7	..	...	...	.....	...	2	28	3	395	7	23	1,312	260	40,247	844	30
31	New York	40	1,564	227	22,643	1,142	37	3,717	641	110,826	2,802	77	5,281	868	133,469	3,944	364	53,877	7,559	1,289,270	41,088	31
32	North Carolina	21	532	135	20,153	288	5	426	44	8,908	262	26	958	179	29,061	550	126	9,543	1,891	346,495	6,562	32
33	North Dakota	..	...	...	.....	.....	..	...	...	.....	...	..	...	...	......	...	37	2,597	534	88,087	1,765	33
34	Ohio	11	367	14	1,425	264	9	628	30	8,296	530	20	995	44	9,721	791	162	20,780	3,553	706,562	16,839	34
35	Oklahoma	35	1,099	265	43,771	655	5	255	31	6,809	169	40	1,354	296	50,580	824	71	4,126	830	149,414	2,840	35
36	Oregon	8	251	56	8,946	148	12	835	116	18,286	639	20	1,086	172	27,232	787	55	4,608	842	151,981	3,434	36
37	Pennsylvania	19	725	68	8,528	560	5	251	5	2,463	187	24	976	73	10,991	747	270	38,748	6,360	1,018,890	30,491	37
38	Rhode Island	..	...	...	.....	.....	..	...	...	.....	...	..	...	...	......	...	16	2,330	425	62,104	1,825	38
39	South Carolina	8	248	47	8,061	106	4	197	33	2,541	72	12	445	80	10,602	178	38	3,135	566	105,120	2,120	39
40	South Dakota	5	74	26	2,207	42	..	...	...	.....	...	5	74	26	2,207	42	39	2,760	525	82,933	1,906	40
41	Tennessee	41	1,001	226	34,266	590	14	478	102	19,081	302	55	1,479	328	53,347	892	93	5,933	1,021	206,762	4,230	41
42	Texas	205	4,394	1,110	166,787	2,266	39	1,626	349	63,777	1,130	244	6,020	1,459	230,564	3,396	382	17,223	3,401	654,862	10,933	42
43	Utah	5	109	53	3,094	43	..	...	...	.....	...	5	109	53	3,094	43	21	1,710	485	61,818	1,149	43
44	Vermont	2	41	17	1,024	20	..	...	...	.....	...	2	41	17	1,024	20	23	2,250	333	48,716	1,695	44
45	Virginia	17	580	125	18,234	312	24	2,179	343	75,346	1,664	41	2,759	468	93,580	1,976	85	7,094	1,353	247,012	5,027	45
46	Washington	17	575	111	18,985	381	5	141	26	5,330	84	22	716	137	24,315	465	87	7,428	1,556	269,584	5,384	46
47	West Virginia	12	651	104	22,853	392	20	1,631	274	58,132	1,147	32	2,282	378	80,985	1,539	60	5,598	907	187,356	3,999	47
48	Wisconsin	13	269	80	7,006	177	7	455	21	4,071	394	20	724	101	11,077	571	133	11,806	2,292	376,309	9,143	48
49	Wyoming	7	130	35	3,431	62	..	...	...	.....	...	7	130	35	3,431	62	17	418	129	14,314	204	49
	Totals (1950)	958	26,561	5,321	774,937	15,944	391	24,444	3,490	677,304	17,287	1,349	51,005	8,811	1,452,241	33,231	4,518	419,871	72,587	12,706,143	311,316	
	(1949)	1,077	29,669	6,099	870,668	17,947	401	24,315	3,673	682,443	17,193	1,478	53,984	9,772	1,553,111	35,140	4,635	413,875	73,001	12,401,188	309,108	
	(1948)	973	27,567	5,068	814,776	17,457	378	23,214	3,536	664,222	17,078	1,351	50,781	9,204	1,478,998	34,535	4,435	403,753	71,839	12,132,283	309,585	
	(1947)	984	28,325	6,137	848,082	18,303	359	22,111	3,262	599,580	16,708	1,343	50,436	9,399	1,447,662	35,011	4,359	395,017	70,654	11,625,170	312,626	
	(1946)	980	28,116	6,114	817,301	17,114	346	20,883	2,927	539,829	15,470	1,326	48,999	9,041	1,337,130	32,584	4,318	385,980	68,417	10,555,289	301,522	
	(1945)	987	30,216	5,597	715,908	17,442	351	20,724	2,986	509,569	15,140	1,338	50,940	8,583	1,225,477	32,582	4,328	382,226	66,545	9,858,289	290,833	
	(1944)	1,011	27,301	5,648	678,965	16,972	357	21,632	3,032	508,624	16,051	1,368	48,953	8,700	1,187,589	33,023	4,349	377,667	65,502	9,491,628	283,291	
	(1943)	1,031	27,314	5,370	638,999	16,282	384	23,094	3,187	513,202	15,865	1,415	50,408	8,557	1,152,201	32,147	4,371	373,115	63,295	9,111,871	273,392	
	(1942)	1,069	27,996	5,147	576,466	15,715	406	23,759	3,057	495,821	15,521	1,495	51,755	8,204	1,072,287	31,236	4,421	368,046	59,620	8,535,935	267,390	
	(1941)	1,149	28,760	5,054	545,884	16,582	435	24,639	3,048	494,967	15,898	1,584	53,399	8,102	1,040,851	32,480	4,494	358,870	54,669	7,933,586	255,147	
	(1940)	1,174	28,958	4,820	500,040	15,049	449	25,108	3,021	463,654	15,686	1,623	54,066	7,841	963,694	30,735	4,524	352,556	51,380	7,218,544	241,499	
	(1939)	1,190	29,879	4,756	501,860	14,955	456	26,496	2,989	456,759	16,154	1,646	56,375	7,745	958,619	31,109	4,486	349,880	49,160	7,144,869	232,435	
	(1938)	1,188	30,193	4,557	495,553	15,255	493	26,550	3,236	470,136	15,630	1,681	56,743	7,793	965,689	30,885	4,438	346,244	47,636	6,813,795	229,019	
	(1937)	1,183	29,957	4,766	508,359	15,458	530	28,085	3,516	507,077	16,477	1,713	58,042	8,282	1,015,436	31,935	4,406	335,799	46,644	6,711,592	225,556	
	(1936)	1,204	28,496	4,356	437,797	13,672	550	28,511	3,629	497,457	16,462	1,754	57,007	7,985	935,254	30,134	4,465	332,881	45,583	6,194,026	211,681	
	(1935)	1,255	29,913	4,384	413,997	14,212	627	34,946	4,357	532,590	18,697	1,882	64,859	8,741	946,587	32,909	4,522	333,427	44,893	5,424,102	200,589	
	(1934)	1,310	29,429	4,391	366,313	12,046	629	33,072	4,038	458,303	15,985	1,939	62,501	8,429	824,616	28,031	4,585	330,213	44,680	4,988,351	185,098	
	(1933)	1,435	33,385	4,962	381,861	13,746											4,661	332,573	44,649	4,882,444	184,197	
	(1932)	1,522	25,759	5,094	428,256	16,309											4,758	334,987	44,572	5,178,598	198,277	
	(1931)	1,560	36,764	5,352	459,184	17,912											4,797	332,591	44,232	5,322,898	206,095	
	(1930)	1,620	38,557	5,233	....	19,948											4,907	330,143	43,281	....	212,645	
	(1929)	1,611	37,977	5,212	....	20,604											4,870	324,596	41,877	....	209,881	
	(1928)	1,699	39,710	4,843	....	......											5,039	325,500	37,641	....	....	
	(1927)	1,682	39,118	.....	....	21,779											4,998	308,149	......	....	201,675	

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE (Continued on next page)

Marginal No.		General					Nervous and Mental					Tuberculosis					Maternity					Industrial					Eye, Ear, Nose and Throat					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	84	6,814	1,233	222,330	4,217	7	10,979	6	9,145	10,636	7	670	1	1,050	622	1	45	25	147	31	..	...	..	.....	...	..	...	..	.....	...	1
2	Arizona	53	3,882	533	99,504	2,611	2	1,523	..	1,125	1,493	10	1,328	..	4,898	1,102	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	2
3	Arkansas	58	4,122	667	126,355	2,549	2	6,895	..	4,787	6,861	2	1,551	..	2,042	1,539	..	...	...	.....	...	2	275	30	8,279	129	..	...	..	.....	...	3
4	California	262	48,641	4,817	1,130,194	36,018	41	47,656	4	29,687	41,994	29	6,501	..	6,830	5,699	11	330	239	7,788	192	2	646	..	11,828	567	2	55	..	3,958	28	4
5	Colorado	70	8,758	953	194,800	6,449	9	7,760	..	4,765	7,285	9	937	..	917	717	2	88	27	335	16	1	11	..	125	3	..	...	..	.....	...	5
6	Connecticut	37	7,481	1,220	234,737	5,786	15	11,935	7	5,495	12,147	6	1,584	..	1,236	1,383	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	6
7	Delaware	9	1,466	217	35,831	995	3	2,370	..	1,085	2,083	2	180	..	160	165	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	7
8	District of Columbia	15	6,799	721	132,016	5,479	1	6,590	11	1,618	6,587	1	617	..	499	588	2	137	115	7,229	103	..	...	..	.....	...	1	100	..	6,036	61	8
9	Florida	104	10,618	1,586	269,786	6,584	5	7,851	5	3,152	7,088	4	1,160	..	1,175	1,078	3	72	64	2,172	55	..	...	..	.....	...	1	10	..	609	4	9
10	Georgia	97	8,255	1,311	282,998	5,626	6	11,891	9	7,016	12,151	3	1,820	..	1,530	1,665	1	12	12	259	4	1	65	..	2,451	52	1	26	..	2,827	21	10
11	Idaho	40	2,155	615	64,008	1,310	3	1,935	..	746	1,808	1	70	..	69	69	1	8	12	57	9	..	...	..	.....	...	..	...	..	.....	...	11
12	Illinois	222	35,827	5,254	1,005,230	27,775	31	53,791	14	20,650	50,194	29	3,770	1	4,143	3,322	6	635	181	7,234	397	2	113	..	2,810	51	3	199	..	5,393	108	12
13	Indiana	96	11,325	2,115	366,715	8,702	13	13,235	..	4,623	12,436	10	1,516	..	1,552	1,332	..	...	...	.....	...	1	50	..	683	30	1	12	..	1,742	5	13
14	Iowa	105	8,748	1,587	288,348	6,735	12	12,002	6	4,715	11,703	5	729	..	578	631	2	90	55	305	68	..	...	..	.....	...	..	...	..	.....	...	14
15	Kansas	99	8,293	1,318	[illegible]	6,290	8	8,993	..	6,100	8,363	3	469	..	538	422	2	70	46	161	43	2	202	..	3,514	161	..	...	..	.....	...	15
16	Kentucky	84	8,296	1,177	[illegible]	5,906	10	11,177	1	8,976	10,247	4	1,074	..	1,798	985	1	25	22	1,320	18	1	90	..	2,815	49	1	38	..	81	8	16
17	Louisiana	94	11,834	1,428	[illegible]	8,021	6	8,960	..	3,587	8,364	5	469	..	616	357	1	60	6	96	53	1	60	..	783	33	1	83	..	5,375	62	17
18	Maine	45	2,974	593	[illegible]	2,126	4	5,047	2	3,826	4,740	4	468	..	519	396	1	17	6	15	14	..	...	..	.....	...	..	...	..	.....	...	18
19	Maryland	47	10,777	1,244	[illegible]	8,033	14	12,035	..	7,687	11,717	6	1,240	1	899	1,099	..	...	...	.....	...	..	...	..	.....	...	2	106	..	5,031	47	19
20	Massachusetts	138	25,078	3,187	[illegible]	18,486	32	32,930	10	12,950	32,419	22	4,310	4	5,251	3,170	5	422	375	13,137	297	..	...	..	.....	...	2	200	..	6,185	120	20
21	Michigan	175	24,141	3,666	[illegible]	18,140	22	32,035	4	12,658	30,872	23	4,812	68	15,225	4,388	3	75	75	2,291	39	2	59	..	1,510	32	1	17	..	326	1	21
22	Minnesota	160	13,637	2,198	[illegible]	10,372	14	13,656	16	5,811	13,119	15	1,945	..	1,898	1,556	2	88	55	4,413	35	..	...	..	.....	...	1	185	..	6,365	112	22
23	Mississippi	79	4,911	795	[illegible]	3,072	6	6,890	..	4,042	6,721	1	457	1	470	405	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	23
24	Missouri	103	13,568	2,077	[illegible]	10,669	15	15,716	2	4,552	15,306	7	2,642	1	3,680	2,037	7	370	315	6,315	246	3	140	..	9,162	301	1	55	..	131	35	24
25	Montana	49	3,555	603	[illegible]	2,261	1	1,950	..	671	1,887	1	235	..	226	203	..	...	...	.....	...	1	85	..	2,072	56	..	...	..	.....	...	25
26	Nebraska	98	5,983	1,107	[illegible]	3,869	5	6,590	2	1,756	6,266	1	225	..	196	174	1	45	25	122	27	..	...	..	.....	...	..	...	..	.....	...	26
27	Nevada	14	907	146	[illegible]	641	1	370	..	155	366	..	...	..	...	...	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	27
28	New Hampshire	32	2,477	484	[illegible]	1,564	2	3,379	..	1,033	3,213	2	133	..	179	118	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	28
29	New Jersey	83	15,517	2,558	[illegible]	11,326	22	28,451	4	8,382	27,551	15	4,042	..	3,894	3,471	3	410	411	10,764	258	..	...	..	.....	...	1	65	..	2,830	39	29
30	New Mexico	32	1,912	374	[illegible]	1,279	4	1,220	..	569	1,179	5	798	1	1,517	638	..	...	...	.....	...	1	78	..	1,218	62	..	...	..	.....	...	30
31	New York	312	66,367	8,309	[illegible]	53,932	57	113,078	57	34,710	111,772	48	10,721	..	11,902	9,398	11	629	353	18,212	461	2	46	1	627	20	7	605	..	33,153	373	31
32	North Carolina	130	11,614	2,233	[illegible]	7,737	11	11,173	22	8,552	10,130	18	3,821	..	7,408	2,905	1	12	12	550	3	1	50	..	799	27	2	79	..	4,877	43	32
33	North Dakota	45	3,209	572	[illegible]	2,093	2	3,250	2	573	3,112	1	350	..	252	267	1	56	6	100	16	..	...	..	.....	...	..	...	..	.....	...	33
34	Ohio	149	24,984	3,916	[illegible]	20,107	28	35,698	1	14,013	33,813	23	3,962	..	3,863	3,640	9	216	177	7,014	110	1	18	..	139	3	..	...	..	.....	...	34
35	Oklahoma	98	6,772	1,227	[illegible]	4,657	7	9,702	..	3,532	9,219	4	683	..	1,057	600	1	26	12	65	11	..	...	..	.....	...	..	...	..	.....	...	35
36	Oregon	57	5,237	928	[illegible]	3,875	6	5,508	1	2,441	5,193	4	480	..	563	413	1	14	12	189	9	..	...	..	.....	...	..	...	..	.....	...	36
37	Pennsylvania	229	41,388	6,623	[illegible]	34,103	40	51,890	..	13,770	49,065	14	4,362	..	3,140	3,277	5	318	83	1,681	293	..	...	..	.....	...	4	312	3	11,879	212	37
38	Rhode Island	14	3,813	307	[illegible]	2,991	4	4,398	4	1,520	4,179	4	952	..	3,588	616	1	175	175	7,592	121	..	...	..	.....	...	..	...	..	.....	...	38
39	South Carolina	53	7,466	935	[illegible]	4,801	3	6,666	1	2,641	6,500	6	916	..	941	726	..	...	...	.....	...	..	...	..	.....	...	1	15	..	395	3	39
40	South Dakota	50	3,365	603	[illegible]	2,300	3	3,408	..	948	3,087	2	322	..	392	237	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	40
41	Tennessee	95	10,105	1,107	[illegible]	7,645	12	10,119	8	6,147	9,608	9	1,775	5	3,035	1,430	..	...	...	.....	...	..	...	..	.....	...	6	133	..	7,107	68	41
42	Texas	431	29,331	4,526	[illegible]	18,884	15	17,857	1	10,914	20,617	18	3,473	..	4,509	2,267	3	89	29	1,017	51	3	373	..	8,915	228	9	97	..	5,805	35	42
43	Utah	26	2,205	539	[illegible]	1,478	2	2,015	..	574	1,905	1	100	..	139	80	1	23	25	765	9	..	...	..	.....	...	..	...	..	.....	...	43
44	Vermont	23	1,750	333	[illegible]	1,210	3	2,217	..	904	2,384	2	118	..	178	117	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	44
45	Virginia	90	13,113	1,760	[illegible]	8,993	12	11,614	12	9,917	14,328	7	1,472	..	1,398	1,301	..	...	...	.....	...	..	...	..	.....	...	3	78	..	2,856	38	45
46	Washington	98	11,790	1,756	[illegible]	8,429	8	10,061	..	4,158	9,442	12	2,947	6	3,818	2,511	2	30	26	176	19	..	...	..	.....	...	..	...	..	.....	...	46
47	West Virginia	65	7,117	1,016	[illegible]	5,260	6	5,076	2	2,062	4,919	5	1,153	..	1,068	1,024	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	47
48	Wisconsin	136	14,254	2,569	[illegible]	10,977	41	17,489	8	7,538	16,662	20	2,353	..	2,354	2,172	1	76	15	233	46	..	...	..	.....	...	..	...	..	.....	...	48
49	Wyoming	28	1,753	279	[illegible]	1,001	3	1,890	..	860	1,716	1	34	..	55	28	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	49
	Totals (1950)	4,713	587,917	85,582	15,830,170	433,364	579	711,921	221	307,165	687,567	431	85,746	89	113,275	72,370	92	4,699	2,994	102,147	3,060	27	2,661	31	58,180	1,807	51	2,560	3	113,951	1,483	
	(1949)	4,761	574,683	85,502	15,450,311	429,443	606	705,423	226	308,055	675,096	444	83,470	110	113,078	69,476	102	5,087	3,153	98,543	3,359	33	2,945	1	60,159	1,925	52	2,542	11	118,665	1,538	
	(1948)	4,589	570,459	83,497	15,160,062	437,590	586	691,199	279	305,000	664,399	438	81,993	21	105,588	66,184	100	5,226	3,319	98,114	3,398	33	2,910	1	61,817	2,054	46	2,531	13	118,355	1,524	
	(1947)	4,539	592,453	82,303	14,665,195	456,761	585	680,913	259	291,954	651,578	441	81,328	32	99,080	62,575	100	5,412	3,312	100,382	3,929	33	2,914	..	57,110	1,869	44	2,534	13	116,563	1,553	
	(1946)	4,523	641,331	79,634	14,051,508	496,527	575	674,930	322	271,209	635,769	450	83,187	36	99,741	61,931	101	5,392	3,426	82,191	3,777	34	2,980	..	56,061	1,838	46	2,749	16	111,417	1,710	
	(1945)	4,744	922,549	78,919	15,228,270	665,105	563	657,393	295	248,876	624,349	449	78,774	54	86,186	59,767	106	5,656	3,514	77,078	3,741	36	2,963	..	58,394	1,817	42	2,664	8	108,531	1,616	
	(1944)	4,833	925,818	76,570	15,060,403	570,331	566	648,745	206	226,393	618,951	453	79,848	38	88,281	63,025	107	5,762	3,708	81,961	3,805	39	2,893	6	55,974	1,789	42	2,695	6	102,898	1,489	
	(1943)	4,885	850,576	72,839	14,454,638	529,340	575	650,993	210	208,677	619,447	455	79,860	112	91,674	65,302	112	6,085	3,800	84,974	3,908	41	3,226	2	61,219	1,920	40	2,421	6	99,918	1,322	
	(1942)	4,557	594,260	67,115	11,631,288	405,382	586	646,118	216	214,117	609,773	468	82,372	116	101,526	70,005	113	5,903	3,777	80,375	4,171	36	2,896	2	46,723	1,608	42	2,546	10	100,544	1,397	
	(1941)	4,518	533,498	61,732	10,646,947	363,614	596	638,144	219	208,592	603,179	477	82,365	99	101,473	70,577	116	5,318	3,573	64,874	3,472	39	2,960	14	49,201	1,662	41	2,502	4	97,013	1,388	
	(1940)	4,432	462,360	58,073	9,219,496	325,160	602	621,284	161	190,376	590,712	479	78,246	44	99,936	67,007	116	5,647	3,380	60,518	3,534	33	2,792	3	41,835	1,504	41	2,470	4	97,853	1,313	
	(1939)	4,356	441,047	55,183	9,018,316	307,991	600	606,284	110	190,249	577,103	480	75,972	38	90,615	65,487	118	5,553	3,196	59,381	3,552	40	3,215	5	46,085	1,622	41	2,167	..	99,291	1,320	
	(1938)	4,286	425,324	52,924	8,545,930	292,870	592	591,822	137	198,703	562,337	493	76,022	41	100,801	66,242	120	5,969	3,361	66,145	3,699	37	2,992	2	42,666	1,482	38	1,992	..	90,863	1,080	
	(1937)	4,245	412,091	51,668	8,349,773	288,280	579	570,616	121	195,624	546,906	508	76,751	33	101,839	64,800	114	5,466	3,187	59,919	3,180	36	2,835	..	41,028	1,519	39	1,946	3	95,241	1,115	
	(1936)	4,207	402,605	49,604	7,755,848	271,658	584	548,952	109	184,936	524,993	506	73,692	36	99,234	63,266	125	6,102	3,816	67,925	4,065	44	3,159	10	41,862	1,536	43	2,118	32	99,273	1,113	
	(1935)	4,257	406,174	48,757	6,875,182	261,294	592	529,311	132	173,009	507,269	496	70,373	58	86,113	60,738	121	6,141	3,825	66,693	3,582	52	3,421	11	41,432	1,576	44	2,263	11	97,181	1,089	
	(1934)	4,198	393,425	47,856	6,291,556	237,395	614	513,845	84	172,415	488,181	495	70,063	..	82,455	59,689	130	7,625	4,131	76,980	4,617	113	5,575	313	69,609	2,423	55	2,793	10	103,720	1,205	

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE—(Continued)

Marginal No.		Children's					Orthopedic					Isolation					Convalescent and Rest					Hospital Departments of Institutions					All Other Hospitals					Totals					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	1	65	..	2,267	47	1	40	..	274	35	1	500	..	7,714	250	1	16	..	279	8	1	148	..	3,404	38	..	...	..	.....	.....	107	19,277	1,265	216,610	15,884	1
2	Arizona	..	...	..	.....	...	1	50	..	358	40	..	.....	..	.....	...	1	18	..	351	16	..	.....	..	.....	.....	..	...	..	.....	.....	67	6,831	533	106,236	5,262	2
3	Arkansas	1	67	8	1,113	71	..	...	..	...	...	1	900	4	13,714	263	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	66	11,110	709	156,290	11,112	3
4	California	4	455	1	12,696	294	2	135	..	2,713	126	1	16	..	192	5	14	529	..	1,725	351	8	868	1	10,923	531	1	100	..	53	100	377	105,932	5,062	1,218,587	88,005	4
5	Colorado	1	210	15	11,507	172	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	5	143	..	1,744	33	..	...	..	.....	.....	97	17,007	995	214,103	14,075	5
6	Connecticut	..	...	..	.....	...	1	178	..	267	149	1	150	..	278	27	3	195	..	1,122	130	8	1,143	11	5,875	489	1	72	2	108	48	72	22,738	1,240	249,118	20,159	6
7	Delaware	..	...	..	.....	...	1	85	..	231	45	..	.....	..	.....	...	..	.....	..	.....	...	1	378	7	216	319	..	...	..	.....	.....	16	4,479	224	37,523	3,637	7
8	District of Columbia	1	227	..	9,374	140	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	3	909	..	2,160	771	1	173	..	45	173	25	15,552	847	159,007	13,902	8
9	Florida	2	127	6	936	80	2	200	..	478	119	1	300	1	5,012	156	4	171	2	1,033	66	2	78	..	1,525	18	1	62	..	71	37	129	20,649	1,664	285,952	15,285	9
10	Georgia	1	40	4	1,257	31	3	285	..	1,606	271	1	889	5	30,825	628	..	.....	..	.....	...	3	188	..	2,433	50	1	80	..	333	72	118	23,551	1,341	333,529	20,583	10
11	Idaho	..	...	..	.....	...	1	84	..	317	69	..	.....	..	.....	...	..	.....	..	.....	...	1	30	..	814	7	..	...	..	.....	.....	47	4,282	527	66,011	3,272	11
12	Illinois	3	358	..	7,115	197	4	182	..	310	143	2	280	..	2,412	70	20	879	..	4,067	685	8	513	..	10,522	144	4	2,811	..	1,154	2,514	334	99,388	5,153	1,071,100	85,600	12
13	Indiana	1	100	..	212	28	..	...	..	...	...	..	.....	..	.....	...	2	268	..	6,143	154	6	454	..	5,049	255	1	23	..	322	18	131	26,983	2,115	387,011	22,960	13
14	Iowa	..	...	..	.....	...	..	...	..	...	...	1	30	1	351	7	1	18	..	41	15	3	260	..	1,545	143	..	...	..	.....	.....	129	21,877	1,648	295,883	19,302	14
15	Kansas	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	5	329	1	3,648	82	1	25	..	250	9	120	18,381	1,395	215,513	15,373	15
16	Kentucky	1	75	..	1,335	42	2	120	..	1,760	119	1	120	..	3,047	79	..	.....	..	.....	...	2	134	..	1,201	28	1	100	..	32	97	108	21,249	1,200	254,554	17,578	16
17	Louisiana	..	...	..	.....	...	1	60	..	171	55	..	.....	..	.....	...	1	33	..	88	14	..	.....	..	.....	.....	2	550	..	1,480	402	112	22,109	1,434	331,387	17,301	17
18	Maine	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	54	8,506	601	91,915	7,270	18
19	Maryland	1	7	7	65	5	2	205	..	840	163	..	.....	..	.....	...	3	202	..	342	180	4	276	..	1,343	212	2	391	..	187	328	81	25,239	1,252	238,914	21,784	19
20	Massachusetts	3	608	13	12,641	376	4	375	..	390	254	3	86	..	218	7	1	25	..	24	12	5	305	..	2,886	197	4	455	..	1,293	430	219	64,794	3,589	568,791	55,798	20
21	Michigan	1	200	..	5,462	128	2	146	..	655	137	2	130	..	988	51	9	496	..	1,154	338	8	893	..	7,821	676	2	107	..	2,204	63	250	63,111	3,813	729,624	54,805	21
22	Minnesota	1	75	..	2,852	66	4	454	..	1,253	403	..	.....	..	.....	...	4	300	..	2,287	228	7	283	..	3,164	135	1	69	..	34	68	209	30,592	2,269	432,683	26,124	22
23	Mississippi	..	...	..	.....	...	..	...	..	...	...	2	775	10	26,092	598	..	.....	..	.....	...	1	40	..	544	2	..	...	..	.....	.....	89	13,073	806	187,644	10,798	23
24	Missouri	2	281	..	5,913	236	2	162	..	410	144	1	168	9	2,352	47	1	37	..	202	24	6	1,650	..	2,116	915	5	1,782	..	3,064	1,651	153	36,871	2,404	416,100	31,611	24
25	Montana	..	...	..	.....	...	1	26	25	218	13	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	53	5,851	628	97,858	4,120	25
26	Nebraska	1	94	18	3,315	72	2	140	..	898	90	..	.....	..	.....	...	1	55	..	32	55	2	43	..	1,474	9	..	...	..	.....	.....	111	13,175	1,152	173,620	10,562	26
27	Nevada	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	15	1,277	146	23,518	1,007	27
28	New Hampshire	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	1	54	..	983	17	..	...	..	.....	.....	37	6,043	484	70,494	4,912	28
29	New Jersey	1	87	7	2,645	38	8	431	..	3,241	319	4	680	..	2,930	162	8	461	..	1,449	337	9	456	3	3,962	280	2	449	..	150	159	156	51,085	2,983	465,152	43,940	29
30	New Mexico	..	...	..	.....	...	1	100	..	405	70	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	43	4,108	375	59,073	3,228	30
31	New York	4	428	20	2,490	216	11	1,139	..	5,285	994	6	1,028	2	11,225	637	12	1,422	..	7,426	980	21	4,582	..	13,065	3,935	18	5,798	..	17,626	5,193	509	205,903	8,742	1,747,003	187,914	31
32	North Carolina	1	40	10	1,526	24	3	340	..	716	243	1	150	..	2,098	85	..	.....	..	.....	...	3	234	..	2,278	87	1	40	..	40	35	172	27,553	2,277	426,711	21,319	32
33	North Dakota	..	...	..	.....	...	..	...	..	...	...	1	15	..	50	1	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	50	6,880	580	96,417	5,189	33
34	Ohio	3	552	..	18,579	399	3	180	..	460	101	..	.....	..	.....	...	8	348	2	2,242	232	9	664	..	6,054	156	5	1,283	..	845	1,154	238	67,905	4,126	844,228	59,715	34
35	Oklahoma	..	...	..	.....	...	2	118	..	2,166	105	1	60	4	1,718	37	..	.....	..	.....	...	3	119	..	3,706	31	..	...	..	.....	.....	116	17,480	1,243	221,027	14,660	35
36	Oregon	..	...	..	.....	...	1	60	..	378	60	2	165	5	659	60	..	.....	..	.....	...	1	30	..	685	8	..	...	..	.....	.....	72	11,494	946	177,540	9,618	36
37	Pennsylvania	5	580	..	14,659	397	5	577	..	649	433	4	950	12	2,998	301	10	500	..	2,848	422	13	905	..	6,470	710	9	853	..	3,818	756	338	105,695	6,721	1,133,256	90,059	37
38	Rhode Island	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	1	70	..	14	69	24	9,408	486	79,732	8,006	38
39	South Carolina	..	...	..	.....	...	1	60	..	238	56	1	250	6	7,010	145	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	65	15,373	942	202,388	12,231	39
40	South Dakota	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	1	36	..	259	20	..	...	..	.....	.....	56	7,131	603	94,374	5,644	40
41	Tennessee	1	75	25	3,141	75	4	215	..	2,625	173	..	.....	..	.....	...	..	.....	..	.....	...	4	796	..	2,411	494	..	...	..	.....	.....	131	23,518	1,445	311,517	19,493	41
42	Texas	2	153	4	3,487	112	4	266	..	1,099	191	2	465	10	10,290	268	7	309	..	814	182	6	418	..	4,588	165	3	118	..	2,411	86	503	52,952	4,570	925,412	43,092	42
43	Utah	1	33	..	122	34	1	20	..	61	20	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	32	4,396	564	73,748	3,526	43
44	Vermont	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	1	12	..	187	4	..	...	..	.....	.....	29	4,097	333	53,631	3,715	44
45	Virginia	..	...	..	.....	...	2	137	..	665	99	..	.....	..	.....	...	..	.....	..	.....	...	4	233	..	4,169	118	..	...	..	.....	.....	118	29,647	1,772	351,834	24,877	45
46	Washington	..	...	..	.....	...	2	170	..	3,073	146	..	.....	..	.....	...	..	.....	..	.....	...	3	228	..	2,118	82	2	280	..	2,031	255	127	25,506	1,788	342,611	20,884	46
47	West Virginia	..	...	..	.....	...	2	223	..	983	135	1	152	8	2,739	66	..	.....	..	.....	...	2	121	6	1,522	57	..	...	..	.....	.....	81	13,842	1,032	219,554	11,491	47
48	Wisconsin	1	150	..	5,075	118	..	...	..	...	...	3	295	..	965	26	2	103	..	191	100	5	594	1	990	552	3	121	4	2,159	111	212	35,435	2,597	461,329	30,764	48
49	Wyoming	..	...	..	.....	...	..	...	..	...	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	...	..	.....	.....	32	3,677	279	47,021	2,775	49
	Totals (1950)	44	5,087	138	129,784	3,401	86	6,963	25	35,223	5,526	44	8,554	77	135,877	4,036	113	6,415	4	33,860	4,529	178	18,547	30	123,854	11,806	72	15,842	6	40,027	13,828	6,430	[illegible]	89,200	17,023,513	1,242,777	
	(1949)	42	4,656	118	116,821	3,220	87	6,954	21	36,368	5,327	56	10,364	118	148,354	4,535	109	6,034	3	36,396	4,430	202	20,920	111	132,831	12,917	78	15,952	6	40,392	13,685	6,572	[illegible]	89,386	16,659,973	1,221,951	
	(1948)	39	4,530	105	112,699	3,148	85	6,924	16	35,065	5,033	61	12,073	140	220,776	5,681	97	6,516	20	37,242	4,689	189	23,361	177	126,235	15,047	72	9,468	2	41,821	8,107	6,335	[illegible]	87,596	16,422,774	1,217,154	
	(1947)	41	4,630	80	100,923	3,277	82	6,519	23	28,124	4,738	65	12,556	183	163,300	5,478	93	5,840	20	32,339	4,206	194	22,516	151	140,276	14,739	59	7,577	2	34,268	6,526	6,276	[illegible]	86,378	15,829,514	1,217,229	
	(1946)	42	4,490	110	96,026	3,257	82	6,518	19	26,960	4,700	70	11,497	220	146,836	5,249	97	6,579	30	32,608	3,852	202	21,253	128	144,664	13,566	58	7,808	4	34,231	7,278	6,280	[illegible]	84,145	15,153,452	1,239,454	
	(1945)	44	4,770	81	90,097	3,495	83	6,679	19	29,154	4,781	63	8,406	87	99,599	3,223	102	9,556	32	57,385	7,009	168	17,720	52	112,211	11,093	111	21,814	40	61,621	19,222	6,511	[illegible]	83,131	16,257,402	1,405,247	
	(1944)	44	4,459	39	85,243	3,096	84	6,864	10	29,435	4,673	61	8,300	67	48,387	2,864	109	13,825	34	61,548	7,993	216	24,484	97	153,057	15,927	57	6,252	10	43,265	5,531	6,611	[illegible]	80,791	16,036,848	1,299,474	
	(1943)	40	4,191	19	84,404	2,705	84	7,025	..	34,871	5,020	55	8,313	44	49,570	3,219	126	12,453	42	34,847	8,211	203	20,224	56	141,658	13,280	39	3,884	4	28,188	3,450	6,655	[illegible]	77,134	15,374,698	1,257,124	
	(1942)	43	4,314	44	84,759	2,908	79	7,313	29	36,178	5,516	52	6,279	33	37,936	2,087	139	9,793	40	35,929	8,041	194	18,532	64	145,865	12,300	36	3,501	2	27,370	2,840	6,345	[illegible]	71,448	12,545,610	1,126,028	
	(1941)	52	6,067	337	117,428	4,130	82	7,382	10	38,270	5,691	52	6,356	21	36,399	2,093	136	9,630	36	38,862	7,967	219	27,037	118	174,335	20,593	30	3,122	..	22,764	2,673	6,358	[illegible]	66,163	11,596,188	1,087,039	
	(1940)	46	4,781	137	92,234	3,263	84	7,662	15	37,294	5,858	57	7,350	25	40,513	3,114	142	8,721	35	36,591	6,776	226	21,702	62	156,436	15,318	33	3,230	..	23,403	2,582	6,291	[illegible]	61,939	10,087,548	1,026,171	
	(1939)	48	5,151	146	95,137	3,521	82	7,706	..	36,891	5,752	60	7,100	6	30,279	2,655	139	8,821	36	34,191	6,948	232	25,014	40	160,927	18,200	30	2,796	4	18,882	2,320	6,226	[illegible]	58,764	9,879,241	996,483	
	(1938)	52	5,410	115	93,420	3,761	75	7,125	..	33,380	5,620	54	6,145	17	34,017	2,511	121	5,846	34	36,265	4,305	235	21,808	112	142,714	14,730	63	10,925	4	36,165	7,069	6,166	[illegible]	56,747	9,421,075	965,706	
	(1937)	51	5,389	111	89,584	3,714	75	6,880	10	33,015	5,563	56	6,187	23	37,295	2,633	120	5,566	38	29,411	3,965	240	21,821	61	144,189	14,498	65	9,000	8	44,569	7,933	6,128	[illegible]	55,566	9,221,517	914,436	
	(1936)	52	5,279	150	89,916	3,422	71	6,333	10	30,199	5,127	61	6,896	84	37,053	2,886	130	6,039	38	32,504	4,191	282	25,213	299	157,227	17,831	81	10,033	17	50,608	8,428	6,189	[illegible]	54,225	8,646,885	908,510	
	(1935)	51	4,874	118	83,015	3,115	68	6,394	12	28,280	5,010	66	7,384	70	47,004	3,301	135	6,233	34	28,218	4,437	275	20,793	231	143,434	13,859	89	11,778	48	47,593	10,240	6,246	[illegible]	53,310	7,717,154	875,510	
	(1934)	58	5,386	146	87,571	3,629	69	6,389	12	28,076	5,003	71	7,130	45	38,949	2,934	125	5,456	45	24,083	3,580	312	21,982	310	135,272	11,590	94	8,132	35	36,730	6,462	6,334	[illegible]	53,026	7,117,410	830,098	

division the present capacity of 711,921 represents 49 per cent of the hospital beds. The psychiatric hospitals in the nongovernmental group have 20,509 beds whereas the governmental division reports 691,412 or 97 per cent of all beds available in this field. As indicated previously, the state hospitals alone can accommodate 602,191 psychiatric patients. A slight increase was noted in the tuberculosis field which now reports 85,746 beds or nearly 6 per cent of the total hospital beds. The remaining institutions with a combined capacity of 71,328 beds represent approximately 5 per cent. These will be found in table D where all hospitals are classified by type of service. Reference should also be made to table G which presents a full summary of all hospital data including detailed information on beds, bassinets, patients admitted, average daily census and hospital births.

Number of Patients Admitted

Comparative Totals
1949: 16,659,973
1950: 17,023,513

The comparative totals included in table 2 show that there has been a continuous increase in the number of admissions since 1934 with the exception of the two year period 1946-1947. Since that time further increases have occurred, each year marking a new high in the utilization of hospital service. The present report, even in the absence of data from 299 hospitals, shows a total of 17,023,513 admissions in 1950 as compared with 16,659,973 in the previous year. Increases occurred in both the governmental and nongovernmental divisions but were more pronounced in the latter group, which reported a net gain of 304,955 compared with 58,585 in the governmental section.

The governmental hospitals with 71.2 per cent of the total hospital beds had 4,317,370 admissions or 25.3 per cent of all patients admitted in 1950. Included in this total are 1,127,937 admissions in the federal group, of which 490,028 are listed in Veterans hospitals as shown in table F. The nongovernmental hospitals received nearly 75 per cent of all patients admitted last year. Their total of 12,706,143 admissions include 1,452,241 in the proprietary hospitals, 4,944,745 in church hospitals and 6,309,157 in other nonprofit associations. From these figures it will be seen that the nonprofit group with a combined total of 11,253,902 admissions served 66 per cent of all patients admitted in the hospitals registered by the American Medical Association.

In table D it will be noted that the general hospitals received 15,830,170 or 92.9 per cent of all patients admitted. Again the increase was chiefly in the nongovernmental group where the general hospital admissions advanced from 11,827,750 in 1949 to 12,129,573 in 1950. In the governmental general hospitals the increase was from 3,622,561 to 3,700,597. The number of patients admitted to psychiatric hospitals—307,165 compared with 308,055 in 1949—is not a full index of the service carried out in these institutions. The present total represents only 1.8 per cent of all patients admitted yet the psychiatric hospitals, as a group, maintain an average daily census of 687,567 which is greater than the combined patient load in all other registered hospitals. It is, of course, well known that the period of hospitalization is far longer in those institutions which accept patients only for psychiatric care. In the tuberculosis hospitals the number of admissions, 113,275, is practically identical with the report of last year. The admissions in other special hospitals, as well as in convalescent units, departments of institutions and other hospitals, are recorded in table D. From the same table it may be shown that out of every one thousand admissions 929 were assigned to general hospitals, 18 to psychiatric institutions, 7 to tuberculosis sanatoriums, 6 to maternity hospitals, 3 to industrial units, 7 to eye, ear, nose and throat, 8 to children's hospitals, 2 to orthopedic, 8 to isolation, 2 to convalescent units, 7 to hospital departments of institutions and 2 to other hospitals. In considering the total volume of hospital service rendered it should be noted that outpatients and hospital births are not included in the admission totals. Comparative data will be found in tables 1 and 2 and other tables included in the statistical report. Reference should also be made to the preceding Hospital Number of THE JOURNAL, May 6, 1950.

Average Daily Census

Comparative Totals
1949: 1,224,951
1950: 1,242,777

The 6,430 hospitals registered by the American Medical Association reported an average daily census of 1,242,777 not including newborn infants. Of this number 931,461 patients were constantly under treatment in the governmental hospitals whereas the average daily patient load in the nongovernmental group was 311,316. Increases occurred in both divisions, but were more pronounced in the governmental classification which can be credited with 74.9 per cent of the total average census in all hospitals. In this section the state hospitals alone reported an average of 632,283 of which 585,216 represents the daily care of psychiatric patients. The nongovernmental division showed only minor changes in relation to the previous report. However, it may be noted that the church hospitals and other nonprofit associations with a combined census of 278,085 carry 22.4 per cent of the daily patient load. The proprietary group reported a census of 33,231 or 2.7 per cent.

The general hospitals, with 40 per cent of the total beds and 92.9 per cent of all admissions in the registered hospitals, carry 34.8 per cent of the daily patient load. The total average was 433,364 including 171,799 in the governmental general hospitals and 261,565 in the nongovernmental group. The latter comprises an average daily census of 240,049 in the church related and other nonprofit hospitals, 10,545 in the individual and partnership classification and 10,971 in the general hospitals classified as corporations unrestricted as to profit.

Again the average daily census in the psychiatric hospitals is the highest that has been recorded in this field. The present total of 687,567 exceeds the previous report of 1949 by 12,471. Reference to table E will show that nearly all of the psychiatric service is under governmental control inasmuch as the hospitals in this division reported an average of 670,578 compared with only 16,989 in the nongovernmental classification. In table G it may be observed further that the state hospitals are largely responsible for the care of psychiatric patients. Their daily psychiatric load of 585,216 illustrates clearly the tremendous volume of hospital service rendered in this field. As a group, the psychiatric hospitals have 49 per cent of the bed capacity, 1.8 per cent of hospital admissions and 55.3 per cent of the total average daily census reported in all registered hospitals.

In the tuberculosis field the combined average census was 72,370 compared with 69,476 in 1949. Here, again, the major responsibility is in the governmental group which had a daily patient load of 63,868 while the nongovernmental hospitals reported 8,502. Similar data on other classifications will be found in table D.

The average daily census of 1,242,777 represents a total of 453,613,605 patient days including 339,983,265 in the governmental hospitals and 113,630,340 in the nongovernmental group. When classified by service it is found that the general hospitals gave 158,177,860 patient days of treatment, the psychiatric institutions 250,961,955, the tuberculosis hospitals 26,415,050 and other units 18,058,740.

Percentage of Beds Occupied

Comparative Totals
1949: 85.1
1950: 85.3

The average bed occupancy in the registered hospitals increased in the last year from 85.1 to 85.3 per cent. As shown in table H there were no gains in the nongovernmental group but increases occurred in all governmental divisions except the federal hospitals. In the governmental section the highest rate, 95.1 per cent, was in the state hospitals, which give their major service to psychiatric care. The county hospitals reported an average occupancy of 83.6 per cent, the municipal institutions 82.9 and the city-county hospitals 78.4. The federal rate was reduced from 79.5 to 77.8 per cent, yet the average occupancy in the governmental classification as a whole was increased from 89.3 to 89.8. The report indicates further that occupancy rates have again decreased in all nongovernmental divisions except in the hospitals classified as corporations unrestricted as to profit. These institutions remained at the previous level of 70.7 per cent whereas the individual and partnership hospitals showed a reduction in bed occupancy from 60.5 to 60.0. In the church and other nonprofit hospitals the rate was reduced from 76.1 to 75.4 per cent.

The classification of hospitals by type of service shows a greater variation in bed occupancy rates. Here the range is from 47.2 per cent in the isolation hospitals to 96.6 in the psychiatric institutions where the service is generally characterized by long periods of hospitalization. In the tuberculosis field the occupancy advanced from 83.2 to 84.4 per cent in the last year while in the general hospitals the rate declined from 74.7 to 73.7. It should be noted, in this connection, that an average occupancy of 80 to 85 per cent is generally considered as the maximum limit of operating efficiency in general hospitals. For practical purposes, therefore, a general hospital reporting 80 to 85 per cent occupancy can be regarded as operating at capacity level.

Average Length of Stay

Comparative Totals
1049: 10.1 days
1950: 10.0 days

In the annual survey of 1950, the general hospital reported 15,830,170 admissions and 158,177,860 patient days. This represents an average length of stay o 10.0 days compared with 10.1 in 1949. Reductions occurred in both the governmental and nongovernmenta groups, as shown in table J, but when reference is mad to individual classifications it is noted that slightly longe periods of hospitalization occurred in the federal genera hospitals, the municipal hospitals and those operating a corporations unrestricted as to profit. In the individua and partnership hospitals there was no change as compared with the previous year.

As a group, the governmental general hospitals hac an average stay of 16.9 days, with the federal hospital showing the longest period of 26.5 days. The state, county, municipal and city-county groups reported 15.0, 13.9, 12.6 and 11.3 days respectively. In the nongovernmental general hospitals the length of stay is much

TABLE H.—*Percentage of Beds Occupied*

	1948	1949	1950
According to Ownership or Control:			
Federal	79.5	79.5	77.8
State	94.3	94.2	95.1
County	81.4	83.0	83.6
City	78.7	81.0	82.9
City-county	75.9	74.9	78.4
Total governmental	89.0	89.3	89.8
Church	80.0	78.2	76.6
Other nonprofit associations	76.5	74.7	74.5
Total nonprofit	77.9	76.1	75.4
Individual and partnership	63.3	60.5	60.0
Corporations (profit unrestricted)	73.6	70.7	70.7
Total proprietary	68.0	65.1	65.2
Total nongovernmental	76.7	74.7	74.1
According to Type of Service:			
General	75.9	74.7	73.7
Nervous and mental	96.1	95.7	96.6
Tuberculosis	81.1	83.2	84.4
Maternity	65.0	66.0	65.1
Industrial	69.9	65.4	67.9
Eye, ear, nose and throat	60.2	60.5	57.9
Children's	69.5	69.2	66.9
	72.7	76.6	79.4
	47.1	43.8	47.2
	72.0	73.4	70.6
Hospital departments of institutions	64.4	61.7	63.7
All other hospitals	85.6	85.8	87.3
Total all hospitals	85.5	85.1	85.3

TABLE J.—*Average Length of Stay Per Patient in General Hospitals, 1948, 1949 and 1950*

	1948	1949	1950
According to Ownership or Control:			
Federal	27.9 days	25.8 days	26.5 day
State	15.5 days	15.4 days	15.0 day
County	14.9 days	14.8 days	13.9 day
City	12.9 days	12.5 days	12.6 day
City-county	10.0 days	11.8 days	11.3 day
All governmental general	17.9 days	17.2 days	16.9 day
Church	8.4 days	8.3 days	8.0 day
Other nonprofit associations	8.6 days	8.3 days	8.2 day
All nonprofit general	8.5 days	8.3 days	8.1 day
Individual and partnership	5.8 days	5.4 days	5.4 day
Corporations (profit unrestricted)	6.4 days	6.4 days	6.5 day
All proprietary general	6.1 days	5.9 days	5.9 day
All nongovernmental general	8.2 days	8.0 days	7.9 day
All general hospitals	10.5 days	10.1 days	10.0 day

shorter as evidenced by the combined average of 7.9 days. The church and other nonprofit hospitals lowered the average stay from 8.3 to 8.1 days whereas the proprietary group remained at the previous level of 5.9 days.

The present average of 10.0 days for all general hospitals may be compared with the reported total of 15.9 in 1945. This reduction of 5.9 days, if applied to the 15,830,170 general hospital admissions in 1950, would represent an actual saving of 93,398,003 days of hospital care.

Births in Hospitals

Comparative Totals
1949: 2,820,791
1950: 2,815,806

The present report, with a smaller number of hospitals represented, shows a slight reduction in hospital births compared with 1949. The net loss was 4,985 in which the gain of 25,721 in the governmental group, the church hospitals and other nonprofit associations, was offset by a combined loss of 30,706 in the individual and partnership hospitals and the corporations unrestricted as to profit. It may be noted, however, that the present total of 2,815,806 hospital births is only 21,333 less than the all-time high of 2,837,139 reported in 1947. The governmental hospitals listed 502,152 births, or 17.8 per cent of the total, whereas the nongovernmental hospitals had 2,313,654 or 82.2 per cent. Included in the latter group are 237,346 births in the proprietary institutions and 2,076,308 in the church and other nonprofit hospitals.

In the general hospitals, the number of births was 2,739,212 compared with 2,744,268 in 1949. This present total, which represents 97.3 per cent of all hospital births, includes 488,012 in the governmental general hospitals and 2,251,200 in the nongovernmental group. The maternity hospitals listed 70,944 births whereas all other hospitals reported only 5,650. Further reference should be made to table K where the comparative reports for 1929 and 1950 give a clear illustration of the tremendous gain that has been made in the utilization of hospital facilities for maternity care.

Nursing Service

Comparative Totals

Graduate Nurses	Student Nurses
1949: 199,295	1949: 99,066
1950: 205,389	1950: 102,611

Information on professional nursing personnel and schools of nursing education is presented in tables M 1, M 2 and M 3. This material, classified by states, type of hospital service and control shows increased nursing personnel in practically all divisions as compared with 1949. The number of graduate nurses employed by hospitals has now reached a total of 205,389 not counting 32,739 assigned to private duty. Last year the corresponding figures were 199,295 and 33,330 respectively. There was likewise an increase of more than 3,000 in the general duty group which listed 108,603 full time nurses and 19,643 employed on part time assignments. This indicates that 128,246 or 62.4 per cent of the professional nurses are utilized for general bedside care while 69,477 or 33.8 per cent serve in administrative, supervisory or educational capacities. A small number, 7,666 or 3.7 per cent, were not classified in the hospital reports. In the control classification, it may be observed that the governmental hospitals employ 63,397 or 30.9 per cent of the graduate nursing personnel, the nongovernmental hospitals 142,010 or 69.1 per cent. It is readily apparent that the general hospitals, with over 15,000,000 admissions a year, will require the greatest volume of nursing service. This demand is clearly reflected in table M 3 which shows a total of 178,800 graduate nurses in the general hospital group whereas all other hospitals have only 26,589.

The accredited schools of professional nursing reported a total of 102,611 students compared with 99,066 in 1949. Of this number 15,772 are receiving their training in governmental hospitals whereas 86,839 are registered in the nongovernmental group. Practically all of the approved schools have been developed in general hospitals as only a few are conducted by psychiatric

TABLE K.—*Births in Hospitals According to Ownership or Control and According to Type of Service*

	1929	1948	1949	1950
According to Ownership or Control:				
Federal	2,296	49,596	60,026	61,938
State	9,125	54,117	59,790	62,918
County	17,527	188,567	141,540	151,139
City	45,787	129,145	186,315	182,343
City-county	8,806	36,116	38,714	43,814
Total governmental	83,541	457,541	486,385	502,152
Church	209,726	942,497	944,610	949,955
Fraternal	1,730	......	......	......
Nonprofit associations	......	1,135,425	1,121,744	1,126,353
Industrial	4,327	......	......	......
Independent	283,136	......	......	......
Total nonprofit	......	2,077,922	2,066,354	2,076,308
Individual and partnership	39,436	148,116	153,917	128,101
Corporations (profit unrestricted)	......	110,702	114,105	109,245
Total proprietary	......	258,818	268,052	237,346
Total nongovernmental	538,355	2,336,740	2,334,406	2,313,654
According to Type of Service:				
General	566,177	2,715,645	2,744,268	2,739,212
Maternity	53,019	75,939	72,274	70,944
Children's	862	......	......	......
Hospital departments of institutions	277	174	175	341
All other hospitals	1,561	2,523	4,074	5,309
Total births in all hospitals	621,898	2,794,281	2,820,791	2,815,806

TABLE L.—*Hospital Births Classified by States*

	Births		Births
Alabama	38,497	Nebraska	27,881
Arizona	16,716	Nevada	2,966
Arkansas	21,347	New Hampshire	11,679
California	197,098	New Jersey	90,187
Colorado	29,193	New Mexico	9,705
Connecticut	39,727	New York	280,723
Delaware	6,845	North Carolina	66,997
District of Columbia	28,216	North Dakota	15,386
Florida	42,900	Ohio	168,951
Georgia	49,643	Oklahoma	33,819
Idaho	12,086	Oregon	32,407
Illinois	173,571	Pennsylvania	201,404
Indiana	83,089	Rhode Island	17,045
Iowa	49,657	South Carolina	29,350
Kansas	35,502	South Dakota	14,125
Kentucky	43,362	Tennessee	48,773
Louisiana	52,854	Texas	144,953
Maine	16,060	Utah	18,193
Maryland	41,480	Vermont	7,711
	90,786	Virginia	62,251
	136,162	Washington	51,364
	67,952	West Virginia	30,860
	22,393	Wisconsin	77,878
Missouri	65,782	Wyoming	6,347
Montana	13,933		
		Total	2,815,806

institutions or hospitals organized for the care of children. A total of 1,106 are now listed in accordance with reports received from the various state boards of nurse examiners. In the listing of accredited schools in the Hospital Register, two symbols are employed to differentiate between institutions conducting schools and those which supply training on an affiliated basis. The diamond symbol (◇) is applied to accredited schools of nursing operated by hospitals individually or under joint hospital and college or university sponsorship, while the circular symbol (⊙) refers to hospitals which provide acceptable supplementary training in a limited field as, for example, pediatrics, psychiatry, tuberculosis or contagious diseases.

The training and utilization of practical nurses was officially recommended by the Committee on Nursing of the American Medical Association whose report was published in THE JOURNAL, July 3, 1948, pages 878-879. The extent to which these services have now been developed in hospitals is illustrated in tables N 1, N 2 and N 3. As compared with 1949 there has been a large increase in the number of practical nurses employed, the number of attendants and nurses' aides. The report of last year listed 33,272 practical nurses, but these have now reached a total of 49,880 including 20,660 in governmental hospitals and 29,220 in the nongovernmental group. When classified by type of service, it is found that 29,749 practical nurses are employed in general hospitals, 12,275 in mental institutions, 4,266 in tuberculosis hospitals and 3,590 in other units. The number of attendants has increased from 118,397 to 131,762 in the last year and the nurses' aides from 58,169 to 64,634. Attendants are utilized to the greatest extent in the governmental hospitals which reported 110,976 compared with 20,786 in the nongovernmental units. The largest number, 79,208, was reported in the mental institutions whereas the general hospitals have 43,724, the tuberculosis services 5,104 and the other hospitals 3,726. There was relatively little change in the number of ward maids and orderlies, each group reporting approximately 25,000.

The report of 1949 listed 242 schools of practical nursing with an enrolment of 5,050 students. The number of schools has now increased to 318 including 96 in the governmental group and 222 in the nongovernmental hospitals. Most of the teaching facilities are in

TABLE M 1.—PROFESSIONAL NURSING PERSONNEL AND SCHOOLS OF NURSING EDUCATION
(Classified by States)

State	Student Nurses	Accredited Schools of Nursing	Schools Offering Affiliated Courses Only		Administrative Nursing Personnel	Full Time Instructors	Supervisors and Asst. Supervisors	Head Nurses and Asst. Head Nurses	General Duty Nurses		Nurses Not Classified	Total Graduate Nurses	Private Duty Nurses
			Schools	Students					Full Time	Part Time			
Alabama	1,126	14	2	38	128	58	274	320	1,202	90	100	2,172	292
Arizona	451	5	..	..	71	19	103	180	722	38	28	1,161	131
Arkansas	699	8	1	40	86	29	163	166	507	15	50	1,016	122
California	3,963	40	10	301	571	241	1,209	2,138	11,225	968	735	17,087	2,114
Colorado	1,117	17	3	79	128	85	231	345	1,416	241	80	2,526	291
Connecticut	2,000	17	7	208	134	131	385	677	2,091	437	134	3,989	899
Delaware	423	7	1	41	28	26	70	87	306	28	16	561	114
District of Columbia	856	9	1	88	63	69	213	403	1,568	227	43	2,586	452
Florida	994	11	2	37	158	49	412	489	2,112	99	82	3,401	555
Georgia	1,821	12	2	42	169	87	305	467	1,147	81	71	2,327	464
Idaho	455	7	2	55	52	21	83	135	312	75	17	695	91
Illinois	7,441	82	15	1,009	633	407	1,616	1,866	6,218	1,603	391	12,734	2,126
Indiana	2,471	25	3	16	191	123	457	680	2,104	529	96	4,180	664
Iowa	2,325	27	5	196	188	95	426	416	1,656	478	109	3,368	326
Kansas	1,858	28	...	...	145	72	390	508	1,067	245	45	2,472	282
Kentucky	1,268	13	3	69	138	55	290	407	1,231	92	43	2,256	317
Louisiana	1,010	13	1	195	160	67	305	444	1,476	62	103	2,617	502
Maine	809	10	2	37	82	44	160	190	673	95	62	1,306	306
Maryland	1,851	20	4	270	158	118	373	596	1,450	159	194	3,048	627
Massachusetts	5,917	56	17	705	436	291	1,176	1,940	4,970	1,055	498	10,366	1,060
Michigan	3,301	33	10	540	421	222	761	1,191	4,718	1,240	267	8,820	655
Minnesota	3,451	26	12	321	288	178	543	1,031	2,745	801	181	5,767	613
Mississippi	879	17	...	...	93	25	188	138	575	13	40	1,072	265
Missouri	2,672	26	10	436	241	119	575	647	2,028	407	238	4,255	670
Montana	701	11	2	84	71	35	129	156	418	138	52	999	127
Nebraska	1,102	13	4	256	130	72	223	246	878	233	64	1,846	232
Nevada	.....	...	...	...	16	1	21	39	186	10	31	304	54
New Hampshire	739	13	...	...	62	39	109	192	583	88	18	1,091	157
New Jersey	3,193	41	7	471	251	191	586	1,070	3,427	857	126	6,508	1,261
New Mexico	46	2	1	...	51	7	64	63	388	51	27	651	70
New York	10,851	90	24	1,120	1,004	638	2,623	5,320	14,483	2,476	798	27,342	5,221
North Carolina	2,601	37	6	139	236	118	506	587	1,913	137	137	3,664	728
North Dakota	744	12	...	...	60	34	107	145	418	81	29	874	73
Ohio	5,813	58	12	623	378	334	1,000	1,533	5,419	1,681	274	10,619	1,617
Oklahoma	857	10	1	61	136	45	242	297	677	77	55	1,529	337
Oregon	842	8	3	76	115	57	199	258	1,349	227	179	2,384	242
Pennsylvania	11,169	106	21	1,027	650	598	1,750	2,247	8,819	1,778	1,079	16,921	3,819
Rhode Island	491	6	2	171	52	46	119	250	683	358	29	1,537	128
South Carolina	1,130	13	2	27	75	39	187	263	855	57	83	1,559	382
South Dakota	843	9	...	...	67	33	129	140	419	71	53	912	67
Tennessee	1,704	16	3	110	158	86	327	469	1,378	106	70	2,594	482
Texas	2,371	31	3	151	557	128	1,016	1,123	3,613	338	328	7,103	1,252
Utah	473	6	1	10	38	23	61	113	438	156	7	836	46
Vermont	336	5	...	...	47	22	82	82	379	84	13	709	117
Virginia	2,108	32	3	104	190	102	404	719	1,578	214	179	3,386	782
Washington	1,497	18	9	213	201	80	401	630	2,841	416	131	4,700	277
West Virginia	1,330	22	...	...	117	68	285	269	1,043	79	75	1,936	306
Wisconsin	2,512	24	3	466	268	104	512	648	2,596	796	201	5,125	401
Wyoming	.....	...	...	...	33	2	44	65	273	56	5	478	22
Totals	102,611	1,106	220	9,832	9,725	5,533	21,834	32,385	108,603	19,643	7,666	205,389	32,739

general hospitals which reported 242 schools compared with 34 in psychiatric institutions, 13 in tuberculosis hospitals and 29 in other units. The governmental hospitals list 2,389 students, the nongovernmental institutions 3,582, a total of 5,971. On further analysis it is found that the general hospitals have 4,241 students, the psychiatric units 984, the tuberculosis hospitals 266 and the other groups 480. Schools of practical nursing are now, according to the present report, represented in all but seven states.

524, 101-200 beds—490, 201-300 beds—294, 301 beds and over—526.

Of the 5,244 clinical laboratories 1,565 are in governmental hospitals and 3,679 in the nongovernmental group. The general hospitals listed 4,119, the psychiatric institutions 396, the tuberculosis hospitals 344 and other institutions 385. The hospitals of 25 beds and under reported 758 laboratories, the institutions of 26-50 beds —1,108, 51-100 beds—1,194, 101-200 beds—980, 201-300 beds—436, 301 beds and over—768. Physicians were designated as laboratory directors in 1,146 governmental and 2,897 nongovernmental hospitals, while a further classification shows 3,232 in general hospitals, 274 in psychiatric institutions, 255 in tuberculosis hospitals and 282 in other units.

TABLE M 2.—PROFESSIONAL NURSING PERSONNEL AND SCHOOLS OF NURSING EDUCATION

(Classified by Control)

			Schools Offering Affiliated Courses Only						General Duty Nurses				
Control	Student Nurses	Accredited Schools of Nursing	Schools	Students	Administrative Nursing Personnel	Full Time Instructors	Supervisors and Asst. Supervisors	Head Nurses and Asst. Head Nurses	Full Time	Part Time	Nurses Not Classified	Total Graduate Nurses	Private Duty Nurses
Governmental													
U. S. Army	.....	...	...	...	68	17	131	521	1,697	6	125	2,565	15
U. S. Air Force	.....	...	...	...	24	...	18	85	371	...	39	537	3
U. S. Navy	.....	...	...	...	38	10	191	750	606	...	115	1,710	...
U. S. Public Health Service	.....	...	1	18	55	10	58	168	877	11	68	1,247	4
Veterans Administration	.....	...	11	417	357	201	917	2,364	9,315	67	253	13,474	...
Indian Affairs	.....	...	...	...	62	2	10	34	435	3	3	549	...
Other Federal	246	2	...	...	14	14	63	129	293	1	...	514	9
Total Federal	246	2	12	435	618	254	1,388	4,051	13,594	88	603	20,596	31
State	4,886	50	83	3,634	692	452	1,936	3,642	6,060	423	546	13,751	656
County	3,268	33	17	881	706	171	1,280	1,963	6,732	932	351	12,135	666
City	5,953	51	20	991	626	416	1,366	2,102	8,349	1,341	319	14,519	1,225
City-county	1,419	16	2	235	101	67	246	325	1,415	147	77	2,378	219
Total other governmental	15,526	150	122	5,741	2,125	1,106	4,828	8,032	22,556	2,843	1,293	42,783	2,766
Total all governmental	15,772	152	134	6,176	2,743	1,360	6,216	12,083	36,150	2,931	1,896	63,379	2,797
Nongovernmental													
Church	45,496	489	22	980	2,202	2,073	6,467	7,805	25,056	6,112	2,628	52,343	10,748
	39,971	447	61	2,608	3,481	2,033	7,722	11,212	41,943	9,418	2,593	78,402	16,897
	229	4	1	24	835	29	641	468	2,516	675	253	5,417	812
	1,143	14	2	44	464	38	788	817	2,938	507	296	5,848	1,485
Total nongovernmental	86,839	954	86	3,656	6,982	4,173	15,618	20,302	72,453	16,712	5,770	142,010	29,942
Total all hospitals	102,611	1,106	220	9,832	9,725	5,533	21,834	32,385	108,603	19,643	7,666	205,389	32,739

TABLE M 3.—PROFESSIONAL NURSING PERSONNEL AND SCHOOLS OF NURSING EDUCATION

(Classified by Type of Service)

			Schools Offering Affiliated Courses Only						General Duty Nurses				
Type of Service	Student Nurses	Accredited Schools of Nursing	Schools	Students	Administrative Nursing Personnel	Full Time Instructors	Supervisors and Asst. Supervisors	Head Nurses and Asst. Head Nurses	Full Time	Part Time	Nurses Not Classified	Total Graduate Nurses	Private Duty Nurses
General	100,963	1,079	37	1,753	7,794	4,943	18,159	26,177	96,357	18,580	6,790	178,800	31,776
N & M	1,432	25	95	4,690	687	379	1,782	3,499	4,416	240	260	11,263	366
	.....	...	35	972	539	80	832	1,354	3,485	236	208	6,734	76
	.....	...	10	468	87	23	169	269	577	191	52	1,368	23
	.....	...	...	.....	29	1	33	79	426	14	28	610	50
[illegible]	.....	...	2	28	51	3	85	102	381	31	54	727	156
Children's	216	2	22	1,299	96	61	174	323	742	75	105	1,576	103
Orthopedic	.....	...	10	110	129	7	213	175	455	74	45	1,098	51
Isolation	.....	...	8	496	46	19	43	83	367	32	15	605	15
Convalescent and rest	.....	...	...	.....	95	1	87	47	229	53	15	527	59
Institutions	.....	...	...	.....	90	2	96	117	607	68	29	1,009	10
All other hospitals	.....	...	1	16	82	14	161	160	561	29	65	1,072	54
Total all hospitals	102,611	1,106	220	9,832	9,725	5,533	21,834	32,385	108,603	19,643	7,666	205,389	32,739

Special Services

From information obtained in the present survey, it may be shown that 2,646 hospitals maintain outpatient departments, 5,244 operate clinical laboratory services and 5,610 have x-ray departments. Outpatient services were reported in 1,043 governmental and 1,603 nongovernmental hospitals. At the same time, 1,761 were listed in general hospitals, 243 in psychiatric institutions, 292 in tuberculosis hospitals and 350 in other units. When classified by size groups, the following distribution was noted: hospitals of 25 beds and under—340 outpatient departments, 26-50 beds—472, 51-100 beds—

X-ray departments, which total 5,610, include 1,693 in the governmental division and 3,917 in the nongovernmental classification. Further, it may be shown that 4,478 are in general hospitals, 357 in psychiatric units, 392 in tuberculosis institutions and 383 in other hospitals. Hospitals of 25 beds and under listed 971 x-ray departments, those with 26-50 beds—1,216, 51-100 beds—1,215, 101-200 beds—989, 201-300 beds—438, 300 beds and over—781. The reports indicate further that physicians are serving as directors of x-ray departments in 1,268 governmental hospitals and 3,330 nongovernmental institutions. The general hospitals list 3,715 departments with physicians in charge, the psychiatric units 264, the tuberculosis institutions 297 and other hospitals 322.

TABLE N. 1.—*Auxiliary Nursing Personnel and Schools of Practical Nursing (Classified by States)*

State	Schools of Practical Nursing	Practical Nurse Students	Practical Nurses Employed	Attendants	Nurses' Aides	Ward Maids	Orderlies
Alabama	3	181	475	1,677	1,002	524	505
Arizona	..	...	121	612	222	115	105
Arkansas	4	56	406	1,296	499	135	138
California	10	340	1,760	12,378	4,763	1,722	2,452
Colorado	10	187	386	1,518	974	233	252
Connecticut	3	55	326	1,626	871	435	435
Delaware	1	18	22	346	177	47	45
District of Columbia	1	60	143	2,133	710	335	210
Florida	2	16	716	1,062	1,063	344	600
Georgia	7	136	609	1,860	1,086	524	630
Idaho	6	46	199	256	200	81	29
Illinois	6	121	1,389	6,819	4,387	1,298	883
Indiana	4	24	471	1,734	2,172	449	343
Iowa	5	63	400	1,140	1,558	421	264
Kansas	4	82	299	2,104	1,352	209	116
Kentucky	6	66	850	1,769	1,118	219	297
Louisiana	4	88	584	1,875	1,089	507	392
Maine	..	...	104	669	211	198	48
Maryland	9	223	713	2,420	1,076	727	601
Massachusetts	16	284	9,404	6,761	1,572	1,598	1,089
Michigan	24	436	1,833	6,012	2,950	1,206	857
Minnesota	14	344	1,214	1,883	2,153	658	354
Mississippi	6	27	289	987	416	204	167
Missouri	11	135	1,187	3,558	1,677	625	522
Montana	3	26	152	280	404	78	42
Nebraska	3	34	382	1,171	873	237	145
Nevada	..	...	6	43	151	30	32
New Hampshire	..	...	98	368	139	135	71
New Jersey	2	15	977	2,932	1,430	1,358	856
New Mexico	2	16	110	359	215	91	61
New York	23	711	10,511	30,610	4,897	2,802	3,264
North Carolina	11	135	775	1,520	1,221	637	1,124
North Dakota	5	27	142	298	413	98	83
Ohio	12	227	829	5,338	5,256	964	908
Oklahoma	4	52	686	1,336	1,050	224	206
Oregon	2	38	307	977	761	161	87
Pennsylvania	14	387	3,456	7,940	3,380	2,112	1,933
Rhode Island	..	...	123	588	144	191	237
South Carolina	2	71	322	627	473	319	334
South Dakota	1	34	109	484	368	116	30
Tennessee	9	168	936	1,809	1,235	521	432
Texas	49	534	2,601	3,983	3,638	1,125	1,345
Utah	..	...	190	329	305	66	65
Vermont	2	43	84	396	60	70	31
Virginia	6	147	808	2,284	618	597	855
Washington	5	230	1,210	1,911	1,188	370	366
West Virginia	2	27	237	675	1,015	325	421
Wisconsin	5	61	886	2,639	1,927	1,014	252
Wyoming	..	...	43	370	175	36	29
Totals	318	5,971	49,880	131,762	64,634	26,491	24,543

Surgical Procedures

In the 1950 annual census of hospitals each institution was requested to indicate the number of patients operated on, a figure generally obtained from the register of operations in the surgical department. It was also asked that the total number of operations be designated, these representing individual surgical procedures as classified in the operative index. Replies received from 5,199 hospitals showed a total of 7,118,305 patients operated on, or 43.5 per cent of the 16,331,699 admissions in this particular group. This may be compared with a previous report published in THE JOURNAL, March 27, 1943, page 1018, when the corresponding total of 5,607,879 represented 44.7 per cent of all patients admitted. The number of operations listed in the present survey was 8,145,873. A direct comparison of these operative procedures and the number of patients operated on is not possible, however, as all hospitals did not give full answers to both questions.

TABLE N 2.—*Auxiliary Nursing Personnel and Schools of Practical Nursing (Classified by Control)*

Control	Schools of Practical Nursing	Practical Nurse Students	Practical Nurses Employed	Attendants	Nurses' Aides	Ward Maids	Orderlies
Governmental							
U. S. Army	2	83	15	1,908	162	426	1,023
U. S. Air Force	..	...	21	339	85	59	317
U. S. Navy	..	...	143	1,248	23	241	1,791
U. S. Public Health Service	1	24	289	1,127	286	28	236
Veterans Administration	..	...	104	24,486	428	478	332
Indian Affairs	1	24	11	211	100	162	63
Other Federal	1	12	171	1,312	22	120	133
Total Federal	5	143	754	30,631	1,106	1,514	3,923
State	46	1,326	12,329	64,757	4,177	1,915	2,411
County	20	359	3,346	7,723	5,081	2,021	2,781
City	19	470	3,770	7,426	3,249	2,667	2,344
City-county	6	91	461	439	942	339	732
Total other governmental	91	2,246	19,906	80,345	13,449	6,942	8,26
Total all governmental	96	2,389	20,660	110,976	14,555	8,456	12,19
Nongovernmental							
Church	55	1,370	8,344	4,165	21,451	7,424	3,33
Nonprofit associations	110	1,784	13,884	14,686	24,899	8,802	7,67
Individual and partnership	42	212	4,083	627	1,853	917	62
Corporations (profit unrestricted)	15	216	2,909	1,308	1,876	892	69
Total nongovernmental	222	3,682	29,220	20,786	50,079	18,035	12,34
Total all hospitals	318	5,971	49,880	131,762	64,634	26,491	24,54

TABLE N 3.—*Auxiliary Nursing Personnel and Schools of Practical Nursing (Classified by Type of Service)*

Type of Service	Schools of Practical Nursing	Practical Nurse Students	Practical Nurses Employed	Attendants	Nurses' Aides	Ward Maids	Orderlies
General	242	4,241	29,749	43,724	57,495	21,684	20,083
N & M	34	984	12,275	79,208	1,922	1,566	834
Tuberculosis	13	266	4,266	5,104	2,574	1,597	1,856
Maternity	3	53	306	101	493	306	15
Industrial	1	20	47	73	158	119	169
E. E. N. T.	..	...	203	40	174	86	112
Children's	7	78	95	54	552	303	75
Orthopedic	1	2	539	613	606	230	209
Isolation	..	...	87	212	61	175	89
Conv. and rest	2	59	518	85	214	127	105
Institutions	6	58	856	997	156	124	641
All other hospitals	9	210	939	1,551	229	174	405
Total all hospitals	318	5,971	49,880	131,762	64,634	26,491	24,543

In the general hospital field, where replies were received from 4,246 hospitals, a total of 6,763,900 patients received operative treatment. This represents 45.2 per cent of the 14,960,973 admissions reported by these same hospitals. When classified by control it may be shown that operations were performed on 1,289,980 patients in the governmental general hospitals and on 5,473,920 in the nongovernmental group. A further distribution by size groups is also of interest as it shows that general hospitals of 25 beds and under reported 171,750 patients operated on, those of 26-50 beds—511,998, 51-100 beds—1,115,652, 101-200 beds—1,797,363, 201-300 beds—1,207,361, 300 beds and over—1,959,776. The total number of operations listed by general hospitals was 7,363,284, but again a direct comparison with the number of patients operated on cannot be made inasmuch as all hospitals in this group did not answer both questions.

General Practice Sections

A Section on the General Practice of Medicine was established by the American Medical Association in 1945. In the following year the House of Delegates recommended further that appointments to general practice sections in hospitals should be made by hospital authorities on the merits and training of individual physicians, stating at the same time that the establishment of such sections should not prevent the approval of hospitals for intern or residency training. The policy of extending hospital privileges in accordance with qualifications and demonstrated ability is likewise embodied in the standards of the Council on Medical Education and Hospitals, which specify that the medical staff should be composed of graduates in medicine who are properly qualified by training, licensure and ethical standing and are proficient in the fields of practice to which they devote themselves. In 1947 the Council recommended that the standards governing the registration of hospitals be modified in such a manner as to encourage the establishment of general practice sections, and urged further that "hospital staff appointments should depend on the qualifications of physicians to render proper care to hospitalized patients, as judged by the professional staff of the hospital, and not on certification or special society memberships."

The American Academy of General Practice has prepared and distributed a Manual on the Establishment and Operation of a Department of General Practice in Hospitals. This manual offers a workable plan for the organization of general practice sections and will serve as a useful guide in the assignment of hospital privileges so that the qualified general practitioner may have a better opportunity to fulfil his responsibilities to the patients under his care.

In the present survey of hospitals the following questions were included with reference to general practice sections: (1) Does staff organization include a department of General Practice? (2) Is it modeled after the Manual of the American Academy of General Practice? (3) Are staff privileges in specialty divisions open to qualified general practitioners? An affirmative answer with reference to the first question was received from 1,654 general hospitals. This total, which represents 35 per cent of all general hospitals registered by the American Medical Association, shows on further analysis that general practice sections have been established in 260 governmental and 1,394 nongovernmental hospitals. Included in these groups are 44 federal hospitals, 14 state institutions, 93 county hospitals, 92 municipal, 17 city-county, 425 church hospitals, 584 other nonprofit associations, 265 individual and partnership hospitals and 120 corporations unrestricted as to profit. By size groups they show the following distribution: 25 beds and under—311 hospitals, 26-50 beds—418, 51-100 beds—388, 101-200 beds—336, 201-300 beds—121, 300 beds and over—80. The report indicates, also, that 1,075 general hospitals have organized their general practice sections in accordance with the plan outlined in the Academy Manual, and that 1,333 have given qualified general practitioners additional staff privileges in specialty divisions. The further distribution of these hospitals by size and control follows relatively the same pattern indicated above. All states and the District of Columbia are represented in this report, but the number of general practice sections varies from 1 in Rhode Island to 180 in Texas.

Standard Nomenclature

In 1933 the first official edition of the Standard Nomenclature of Disease was published and by 1935 approximately 500 hospitals had adopted this method of classification. The Standard Nomenclature of Operations was added in 1942 and in that year a total of 1,014 hospitals reported the use of these standard procedures. This number, which increased to 1,660 in 1943, has, according to the present survey, reached the total of 4,457. It is extremely encouraging, therefore, to observe that of the 6,430 hospitals registered by the American Medical Association nearly 70 per cent are now utilizing the Standard Nomenclature of Diseases and Operations. When classified by type of service it is shown that 3,370 general hospitals, 396 mental institutions, 273 tuberculosis hospitals and 418 other units employ the Standard Nomenclature. Included in the 4,457 hospitals are 288 federal institutions, 407 state hospitals, 347 county, 222 municipal, 53 city-county, 830 church hospitals, 1,494 other nonprofit associations, 563 individual and partnership hospitals and 253 corporations unrestricted as to profit. It is of interest, also, to illustrate the utilization of the Standard Nomenclature in accordance with the following size groups: 25 beds and under—707 hospitals, 26-50 beds—864, 51-100 beds—959, 101-200 beds—843, 201-300 beds—395, 301 beds and over—689.

The Standard Nomenclature has been officially endorsed by the American Medical Association, the American Hospital Association, the American College of Surgeons and many other medical and surgical societies. As it is highly desirable that a uniform classification be achieved it is strongly urged that the hospitals which are not included in the above group give serious consideration to the adoption of the Standard Nomenclature which is suitable for universal use.

HOSPITALS REGISTERED BY THE AMERICAN MEDICAL ASSOCIATION

The following list contains the names of 6,430 hospitals, sanatoriums and related institutions that are located in the United States and 123 in Alaska, Canal Zone, Guam, Hawaii, Puerto Rico and Virgin Islands. The list for each state is presented in two groups: (1) hospitals and sanatoriums and (2) related institutions. The related institutions include infirmaries, nursing homes and other institutions designed to give certain medical and nursing care in an ethical and acceptable manner, without giving a full hospital service.

Registration is a basic recognition extended to all hospitals and related institutions in accordance with the requirements outlined in the Essentials of a Registered Hospital officially adopted by the House of Delegates of the American Medical Association in 1928 and revised in 1948. *Approval*, on the other hand, is a designation extended by the Council on Medical Education and Hospitals to certain registered hospitals which meet the requirements for internship, residency or fellowship training; approval is also extended by the American College of Surgeons to those hospitals which unconditionally meet its minimum requirements for general standardization.

KEY TO SYMBOLS AND ABBREVIATIONS

★ Approved by the Council on Medical Education and Hospitals for the training of interns. Reference should be made to the list of Approved Internships published in The Journal, April 15, 1950. The next revision will appear in The Journal, Sept. 29, 1951.

+ Approved by the Council on Medical Education and Hospitals for the training of resident physicians. Reference should be made to the list of Approved Residences and Fellowships published in The Journal, April 15, 1950. The next revision will appear in The Journal Sept. 29, 1951.

▲ Approved by American College of Surgeons as meeting unconditionally its minimum requirements for general standardization.

◇ School of nursing accredited by state board of nurse examiners.

⊙ Affiliated for nurse training on state accredited basis.

† Figures for "average census" and "admissions" are exclusive of newborn infants.

The column headed "Type of Service" indicates the general categories of patients treated:

Card	Cardiac	ENT	Eye, ear, nose and throat	Iso	Isolation	N&M	Nervous and mental
Chil	Children	Gen	General	Mat	Maternity	Orth	Orthopedic
Chr	Chronic	Incur	Incurable	MatCh	Maternity and children	PhyMed	Physical Medicine
Conv	Convalescent and rest	Indus	Industrial	MeDe	Mentally deficient	SkCa	Skin and cancer
Drug	Drug and alcoholic	Inst	Institutional	Ment	Mental	TB	Tuberculosis
Epil	Epileptic					Ven	Venereal

The column headed "Control" indicates control, or auspices under which the institution is conducted:

GOVERNMENTAL			NONPROFIT ORGANIZATIONS		PROPRIETARY	
Fed	Federal	State	Church		Indiv	Individual
IA	Indian Affairs	City	NPAssn	Nonprofit Association	Part	Partnership
Army	United States Army	County			Corp	Corporation (unrestricted as to profit)
USAF	United States Air Force	City-County				
Navy	United States Navy	CyCo				
USPHS	United States Public Health Service					
Vet	Veterans Administration					

Corrections were made in the list to the time of going to press. Totals of the list, therefore, may vary from totals in Tables 1 and 2 which were necessarily compiled earlier.

ALABAMA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albertville, 5,395—Marshall							
Sand Mountain Infirmary	Gen	Indiv	25	8	8	237	932
Alexander City, 6,433—Tallapoosa							
Russell Hospital	Gen	Corp	60	26	15	456	1,843
[illegible]							
[illegible]	Gen	Part	40	19	10	322	2,055
[illegible]	Gen	Corp	85	29	15	131	1,534
Anniston, 31,150—Calhoun							
Anniston Memorial Hosp.▲◇	Gen	City	105	82	24	...	5,261
Atmore, 5,751—Escambia							
Atmore General Hospital	Gen	Indiv	28	7	12	165	707
Auburn, 12,943—Lee							
John Hodges Drake Hospital	Gen	State	65	28	9	215	2,138
Bellamy, 450—Sumter							
Bellamy Hospital	Gen	NPAssn	16	2	2	25	53
Bessemer, 28,471—Jefferson							
[illegible]▲	Gen	Corp	72	41	15	528	2,498
[illegible]							
[illegible]	Gen	Church	215	184	26	1,179	8,752
Carraway Methodist Hospital★+▲◇	Gen	Church	225	101	33	1,306	3,868
Children's Hospital+▲⊙	Chil	NPAssn	65	47	..	...	2,267
[illegible]	Gen	Corp	66	42	15	472	2,737
[illegible]	Gen	Indiv	23	14	4	70	865
[illegible]	Gen	Corp	40	16	16	87	368
[illegible]	N&M	Indiv	50	40	..	...	1,042
[illegible]	Gen	State	592	407	88	3,953	18,787
[illegible]	TB	NPAssn	224	215	..	...	414
[illegible]	Ven	Fed State	500	250	..	...	7,714
[illegible]	Conv	Part	16	8	..	...	279
[illegible]	Gen	Church	135	110	18	596	5,189
[illegible]	Gen	Corp	149	116	31	1,167	5,226
	Unit of Jefferson-Hillman Hospital						
[illegible] Clinic▲	Orth	NPAssn	40	35	..	...	274
Brewton, 5,157—Escambia							
Escambia County Hospital	Gen	CyCo	26	18	8	245	1,198
Butler, 670—Choctaw							
Barber Hospital	Gen	Part	30	11	6	275	1,530
Camp Rucker,—Dale							
U. S. Army Hospital	Gen	Army	300	...		.Reopened	1950
Chickasaw, 4,896—Mobile							
Chickasaw Infirmary	Gen	Indiv	14	3	8	94	247
Cullman, 7,524—Cullman							
Cullman Hospital	Gen	CyCo	60	38	15	1,030	3,003
D[illegible]							
[illegible]	Gen	CyCo	86	32	13	335	1,522

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
District No. 1 Tuberculosis Sanatorium	TB	StateCo	160	155	..	...	259
Hamil Clinic-Hospital	Gen	Part	30	8	8	120	631
Dothan, 21,556—Houston							
Frasier-Ellis Hospital▲◇	Gen	NPAssn	57	45	9	91	1,532
Moody Hospital▲	Gen	Indiv	75	47	14	1,003	2,761
East Tallassee, 3,000—Tallapoosa							
Community Hospital	Gen	NPAssn	50	21	14	268	1,722
Enterprise, 7,270—Coffee							
Gibson Hospital	Gen	NPAssn	58	28	7	255	2,650
Eufaula, 6,913—Barbour							
Salter Hospital	Gen	Indiv	54	29	13	245	1,503
Fairfield, 13,219—Jefferson							
Lloyd Noland Hospital★+▲	Gen	NPAssn	300	195	46	1,549	8,354
Fayette, 3,710—Fayette							
McNease and Robertson Hospital▲	Gen	Part	20	13	8	165	831
Florence, 23,832—Lauderdale							
Eliza Coffee Memorial Hosp.	Gen	CyCo	92	57	26	1,068	4,078
Gadsden, 55,528—Etowah							
Baptist Memorial Hospital	Gen	Church	80	46	14	754	3,896
Etowah County Tuberculosis Sanatorium	TB	StateCo	22	16	..	...	36
Holy Name of Jesus Hosp.★▲◇	Gen	Church	120	94	20	922	6,468
Greenville, 6,765—Butler							
[illegible] Hospital	Gen	Indiv	25	6	6	142	492
[illegible]	Gen	Corp	61	35	14	303	2,160
[illegible]							
[illegible]	Gen	Corp	31	18	10	233	1,198
[illegible]							
City Hospital	Gen	City	60	19	12	..	1,440
Hartford, 1,655—Geneva							
Tippins Hospital	Gen	Part	20	14	5	244	1,020
[illegible]							
[illegible]	Gen	Indiv	15	8	8	128	564
[illegible]							
[illegible]	Gen	NPAssn	86	52	14	768	3,537
Jasper, 8,558—Walker							
Peoples Hospital	Gen	County	75	32	20	181	3,278
Walker County Hospital	Gen	Corp	55	30	12	217	1,568
Lafayette, 2,357—Chambers							
Batson Memorial Sanatorium	TB	Counties	70	72	..	...	78
Wheeler Hospital	Gen	Indiv	32	28	7	179	1,467
Langdale, 2,733—Chambers							
George H. Lanier Memorial Hospital	Gen	NPAssn	87	...	33	Estab.	1950

Key to symbols and abbreviations is on this page, preceding the tabulation

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Leeds, 2,916—Jefferson							
Davis Clinic-Hospital	Gen	Indiv	15	3	6	82	221
Leeds Hospital	Gen	Corp	35	18	6	173	2,143
Luverne, 2,215—Crenshaw							
Marvin M. Kendrick Memorial [illegible]	Gen	Part	14	8	9	98	541
[illegible] Hospital	Gen	Church	35	15	12	249	710
City Hospital★+▲◇	Gen	CyCo	300	221	60	1,841	8,186
Mobile County Tuberculosis Sanatorium	TB	NPAssn	45	34			35
Mobile Infirmary▲◇	Gen	NPAssn	185	160	47	2,031	8,643
Providence Hospital▲◇	Gen	Church	100	85	30	921	5,205
U. S. Air Force Hospital	Gen	USAF	168	85	10	162	1,722
[illegible]▲	Gen	USPHS	145	141	..	...	2,031
[illegible]	Gen	Indiv	20	18	8	244	1,383
Fraternal Hospital	Gen	Indiv	45	37	8	188	1,573
Hubbard Hospital	Gen	Indiv	40	23	..	1	1,313
Kilby Prison Hospital	Inst	State	50	22	..	...	782
Montgomery Tuberculosis Sanatorium	TB	NPAssn	127	108	..	..	190
Oak Street General Hospital	Gen	Indiv	40	...	6	..	...
[illegible]	Gen	Indiv	35	34	16	666	2,381
[illegible]▲	Gen	Church	156	116	25	829	6,465
[illegible]▲	Gen	USAF	250	100	22	489	3,549
[illegible]▲	Gen	Vet	285	266	.	...	3,420
Mount Vernon, 810—Mobile							
Searcy Hospital	Ment	State	1,950	1,980	..	...	621
Opp, 5,212—Covington							
Mizell Memorial Hospital	Gen	NPAssn	29	10	12	61	222
[illegible]	Gen	Indiv	46	21	9	172	1,247
[illegible]	Gen	City	77	45	13	337	3,031
Prattville General Hospital	Gen	Part	24	20	4	164	1,852
Roanoke, 5,419—Randolph							
[illegible]	Gen	Indiv	50	15	11	77	1,088
[illegible]	Gen	Indiv	33	20	7	234	1,969
[illegible]	Gen	Part	35	27	7	175	2,127
[illegible]	Gen	Indiv	20	5	7	162	510
[illegible]	TB	Counties	22	22	..	...	38
[illegible] Hospital▲	Gen	Indiv	65	36	7	27	1,170
Selma Baptist Hospital▲	Gen	Corp	100	60	15	416	4,027
U. S. Air Force Hospital	Gen	USAF	25	5	..	..	306
[illegible]▲	Gen	Part	41	30	8	154	2,020
[illegible]	Gen	CyCo	63	49	18	780	4,503
[illegible]▲	Gen	Corp	36	18	12	180	1,646
[illegible]▲	Gen	City	78	45	18	379	3,369
[illegible]▲	Gen	NPAssn	70	42	24	599	2,933
Troy, 8,474—Pike							
[illegible]	Gen	Corp	42	30	7	268	2,529
[illegible]	Gen	Indiv	50	28	10	214	1,648
Bryce Hospital	Ment	State	4,521	4,422	..	...	1,464
Druid City Hospital▲◇	Gen	CyCo	194	142	30	1,836	9,581
[illegible]▲	Ment	Vet	968	848	..	...	1,744
T[illegible]							
[illegible]	Gen	CyCo	30	...	8	Estab. 1950	
[illegible]▲	Ment	Vet	2,205	2,107	..	...	4,070
T[illegible]							
John Albion Andrew Memorial Hospital▲◇	Gen	NPAssn	145	91	24	679	3,648
Wetumpka, 3,812—Elmore							
Wetumpka General Hospital	Gen	Indiv	35	19	7	84	849
York, 1,766—Sumter							
Sumter County Hospital	Gen	Part	30	...	3	Estab. 1950	

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Birmingham, 298,720—Jefferson							
Alabama Boys' Industrial School	Inst	State	26	2	..	...	174
Salvation Army Home and Hospital	Mat	Church	45	31	25	91	147
Mor[illegible]							
A[illegible]	Inst	State	35	5	..	...	1,241
[illegible]ry	MeDe	Part	35	29	4	...	66
[illegible]	Inst	Church	18	1	1	...	52
Tu[illegible]							
I[illegible]	MeDe	State	1,250	1,210	..	...	138
University, 2,000—Tuscaloosa							
University Hospital	Inst	State	37	9	..	...	1,207

ARIZONA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ajo, 5,777—Pima							
Phelps Dodge [illegible]	Gen	NPAssn	45	15	8	181	942
[illegible]	Gen	Indiv	10	7	1	10	129

ARIZONA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Bisbee, 3,813—Cochise							
Copper Queen Hospital	Gen	NPAssn	42	14	8	132	1,096
Casa Grande, 4,244—Pinal							
Casa Grande Hospital	Gen	Indiv	17	...	7	Estab. 1950	
Norman Hospital	Gen	Part	19	5	6	106	405
Chandler, 3,811—Maricopa							
U. S. Air Force Hospital▲	Gen	USAF	136	21	8	...	967
Cottonwood, 1,710—Yavapai							
Marcus J. Lawrence Memorial Hospital▲	Gen	NPAssn	38	19	5	133	1,196
Douglas, 9,393—Cochise							
Cochise County Hospital	Gen	County	75	63	7	90	685
Douglas Hospital	Gen	NPAssn	39	22	8	298	1,342
[illegible]▲	Gen	NPAssn	30	15	8	258	1,673
U. S. Army Hospital	Gen	Army	10	5	3	63	419
Florence, 1,777—Pinal							
Pinal General Hospital	Gen	County	60	37	11	306	1,842
Fort Defiance, 600—Apache							
Navajo Medical Center	GenTb	IA	250	199	13	329	3,029
Ganado, 150—Apache							
Sage Memorial Hospital▲◇	Gen	Church	100	67	15	209	2,019
Globe, 6,456—Gila							
Gila County Hospital	Gen	County	50	47	8	259	1,109
Grand Canyon, 900—Coconino							
Grand Canyon Hospital	Gen	Indiv	10	3	4	24	267
Keams Canyon, 150—Navajo							
Hopi General Hospital	Gen	IA	38	33	5	112	1,062
Kingman, 3,314—Mohave							
Mohave General Hospital	Gen	County	45	20	10	252	1,292
McNary, 55—Apache							
McNary Hospital	Gen	NPAssn	15	7	4	165	797
Mesa, 16,766—Maricopa							
Southside District Hospital	Gen	NPAssn	115	64	27	1,015	4,295
Miami, 4,327—Gila							
Miami-Inspiration Hospital▲	Gen	NPAssn	45	25	6	240	1,278
Morenci, 6,549—Greenlee							
Morenci Hospital▲	Gen	NPAssn	54	49	10	434	1,824
Nogales, 6,141—Santa Cruz							
St. Joseph's Hospital	Gen	Church	32	19	9	184	750
Parker, 1,195—Yuma							
Colorado River Indian Hosp.	Gen	IA	15	12	7	77	654
Phoenix, 105,442—Maricopa							
Arizona State Hospital	Ment	State	1,510	1,487	..	...	990
Convalescent Home for Crippled Children	Orth	State	50	40	..	...	358
[illegible]★▲◇	Gen	Church	210	187	42	2,013	11,368
[illegible]	GenTb	County	328	249	..	...	4,411
[illegible]	TB	IA	100	90	..	...	204
St. Joseph's Hospital★+▲◇	Gen	Church	192	174	45	2,688	9,525
St. Luke's Hospital	TB	NPAssn	82	76	..	...	169
St. Monica's Hospital and Health Center★+▲◇	Gen	NPAssn	230	159	30	1,531	7,761
Veterans Admin. Hospital▲	Gen	Vet	144	131	..	...	2,525
Prescott, 6,734—Yavapai							
Prescott Community Hosp.▲	Gen	NPAssn	42	24	12	216	1,381
Yavapai County Hospital	InstGen	County	60	55	8	64	460
Ray, 1,100—Pinal							
Kennecott Copper Corporation Hospital	Gen	NPAssn	20	12	8	116	384
Sacaton, 315—Pinal							
[illegible]	Gen	IA	42	20	7	224	1,238
[illegible]	Gen	NPAssn	37	6	10	140	555
[illegible] Hospital	Gen	Indiv	53	...	9	Estab. 1950	
San Carlos, 100—Gila							
San Carlos Indian Hospital	Gen	IA	45	15	6	91	876
Superior, 5,900—Pinal							
Magma Copper Company Hospital	Gen	NPAssn	22	12	6	109	613
Tempe, 7,688—Maricopa							
Arizona State Tuberculosis Sanatorium	TB	State	90	86	..	...	103
Tempe Clinic-Hospital	Gen	Indiv	30	17	16	231	1,047
Tuba City, 150—Coconino							
Western Navajo Hospital▲	Gen	IA	35	34	8	190	995
Tucson, 45,064—Pima							
Barfield Convalescent Hosp.	TbConv	Corp.	48	16	..	...	351
Comstock Children's Hospital	TB	NPAssn	35	27	..	...	50
Pima County General Hosp.▲	GenTb	County	150	138	4	5	2,281
St. Luke's in the Desert Sanitarium	TB	Church	32	21	..	...	49
St. Mary's Hospital and Sanatorium★+▲◇	GenTb	Church	216	168	30	1,692	7,838
San Xavier Hospital▲	Gen	IA	46	25	6	70	720
Southern Pacific Sanatorium and Hospital	TB	NPAssn	93	67	..	...	898
Tucson Medical Center★+▲	Gen	NPAssn	225	127	30	1,257	6,260
U. S. Air Force Hospital▲	Gen	USAF	100	46	..	...	1,638
Veterans Admin. Hospital▲	TB	Vet	412	343	..	...	1,960
Whipple, 400—Yavapai							
Veterans Admin. Center▲	TB	Vet	531	455	..	...	1,600
Whiteriver, 300—Navajo							
Fort Apache Agency Hospital	Gen	IA	34	24	4	75	1,174
Wickenburg, 1,726—Maricopa							
Community Hospital	Gen	NPAssn	21	14	7	83	765
Willcox, 1,256—Cochise							
Valley Hospital	Gen	Corp	14	...	3	Estab. 1950	
Williams, 2,178—Coconino							
Williams Hospital	Gen	NPAssn	20	...	4	Estab. 1950	
Winslow, 6,498—Navajo							
Winslow Indian Sanatorium and Hospital▲	Gen	IA	30	29	8	171	1,206
Yuma, 9,095—Yuma							
Fort Yuma Indian Hospital▲	Gen	IA	28	8	8	31	243
Yuma County General Hosp.	Gen	County	99	63	19	541	2,219

Key to symbols and abbreviations is on page 124

ARIZONA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]pital	Gen	City	14	4	5	124	604
[illegible]	TB	Indiv	13	7	..	...	21
[illegible]	Conv	NPAssn	16	...	..	Estab. 1951	
[illegible]	N&M	Part	13	6	..	...	135
F[illegible]							
[illegible]	TB	Indiv	10	3	..	...	13
T[illegible]							
[illegible]	Gen	City	19	3	3	14	119
Tucson, 45,454—Pima							
Arizona State Elks Hospital	TB	NPAssn	30	17	..	...	35

ARKANSAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Alexander, 134—Pulaski							
Thomas C. McRae Memorial Sanatorium	TB	State	369	360	..	...	330
[illegible]	Gen	Part	34	23	12	572	2,328
[illegible]	Gen	Indiv	12	9	6	105	670
[illegible]	Gen	Indiv	56	22	8	97	1,173
Sloan Hospital	Gen	Indiv	12	...	6	...	...
Benton, 6,263—Saline							
State Hospital	Unit of State Hospital, Little Rock						
Bentonville, 2,919—Benton							
[illegible]	Gen	City	31	15	14	411	2,212
[illegible]	Gen	Indiv	35	20	6	150	2,000
Walls Hospital	Gen	Indiv	50	20	12	405	2,440
Camden, 11,341—Ouachita							
Camden Hospital	Gen	NPAssn	50	36	8	366	2,400
Camp Chaffee,—Sebastian							
U. S. Army Hospital	Gen	Army	500	...	Reopened 1950		
[illegible]	Gen	Indiv	8	3	4	89	150
[illegible] Hospital	Gen	Church	25	15	10	301	1,104
Conway, 8,546—Faulkner							
[illegible]	Gen	City	32	21	12	403	1,569
[illegible]▲	Gen	NPAssn	58	20	13	258	1,645
[illegible]	Gen	NPAssn	30	15	8	222	1,478
[illegible]	Gen	Church	30	21	8	274	1,332
Dumas, [illegible]—Desha							
Dumas Hospital	Gen	NPAssn	25	9	9	146	574
[illegible]	Gen	Indiv	30	12	6	135	733
[illegible]▲	Gen	Church	75	68	18	753	3,572
[illegible]▲	Gen	City	60	37	20	816	3,383
[illegible]▲	Gen	Vet	300	250	..	...	3,562
Washington County Hospital	Gen	County	50	...	12	Estab. 1950	
Fort Smith, 47,864—Sebastian							
Arkansas Tuberculosis Sanat.	Unit of Arkansas Tuberculosis Sanatorium, State Sanatorium, Ark.						
St. Edward's Mercy Hospital▲◇	Gen	Church	140	119	30	1,340	5,879
Sparks' Memorial Hospital▲◇	Gen	NPAssn	96	65	18	340	3,520
[illegible]	Gen	Part	25	6	6	223	660
[illegible]	Unit of State Hospital, Little Rock						
Estelle Hospital	Gen	Part	16	5	6	146	414
Helena, 11,244—Phillips							
Helena Hospital	Gen	NPAssn	71	38	18	463	2,688
Hope, 8,602—Hempstead							
[illegible]	Gen	Indiv	20	8	6	40	381
[illegible]	Gen	Indiv	29	8	5	127	565
[illegible]	Gen	NPAssn	26	13	9	73	753
[illegible]—Garland							
[illegible]	Gen	Indiv	16	3	5	6	109
Army and Navy General Hospital★+▲	Gen	Army	516	396	9	169	4,057
Leo N. Levi Memorial Hospital+▲○	Gen	NPAssn	112	85	13	390	1,923
St[illegible]▲	Gen	Church	158	112	18	353	4,508
U[illegible]▲	Ven	USPHS	900	263	4	4	13,714
[illegible]	Gen	Part	9	4	5	87	409
[illegible]	Gen	Church	100	88	16	1,132	5,206
[illegible]	Gen	Part	40	16	8	173	1,401
Lewisville, 1,219—La Fayette							
La Fayette County Memorial Hospital	Gen	County	26	7	6	76	389
Li[illegible]							
[illegible]▲	Gen	Church	271	228	41	1,513	11,355
[illegible]▲	Chil	NPAssn	67	71	3	...	1,113
[illegible]	Gen	Indiv	20	3	2	14	128
[illegible]▲	Indus	NPAssn	125	76	..	...	3,219
[illegible]▲	Gen	Church	200	175	50	1,589	9,475
State Hospital▲	Ment	State	4,800	4,871	..	...	2,113
Trinity Hospital and Clinic▲	Gen	Part	40	18	10	85	1,144
University Hospital★+▲	Gen	State	202	171	38	1,739	7,179
Veterans Admin. Hospital	Gen	Vet	500	...	.	Estab. 1950	

ARKANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Magnolia, 6,908—Columbia							
City Hospital	Gen	City	44	32	12	475	2,416
Mena, 4,439—Polk							
Polk County Memorial Hosp.	Gen	County	37	...	8	Estab. 1950	
Monticello, 4,498—Drew							
Drew County Memorial Hosp.	Gen	NPAssn	53	...	10	Estab. 1950	
Morrilton, 5,462—Conway							
[illegible]▲	Gen	Church	31	24	9	312	1,393
[illegible] Hospital	Gen	County	52	15	12	396	1,011
N[illegible]							
[illegible]	Gen	Part	22	13	9	375	1,39
Newport Hospital	Gen	Part	35	20	10	250	1,80
North Little Rock, 42,142—Pulaski							
Veterans Admin. Hospital+▲⊙	Ment	Vet	2,095	1,990	..	...	2,67
Paragould, 9,660—Greene							
Community Methodist Hosp.	Gen	NPAssn	75	26	12	357	2,08
Pine Bluff, 37,147—Jefferson							
Davis Hospital▲	Gen	City	120	71	28	973	4,77
[illegible]	Gen	County	34	13	8	28	14
[illegible]	Gen	Indiv	25	11	6	177	98
St. Mary's Hospital	Gen	Indiv	44	38	10	462	2,25
Searcy, 6,002—White							
Hawkins Clinic Hospital	Gen	Indiv	26	10	7	140	801
Porter Rodgers Hospital	Gen	Indiv	65	52	18	412	3,367
Siloam Springs, 3,271—Benton							
City Hospital	Gen	City	22	12	6	271	85
State Sanatorium, 300—Logan							
Arkansas Tuberculosis Sanatorium▲	TB	State	1,182	1,179	..	...	1,71
Texarkana, 15,833—Miller							
St. Louis Southwestern Hospital▲	Indus	NPAssn	150	47	..	...	2,60
St. Michael's Hospital▲	Gen	Church	150	53	30	855	5,06

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Booneville, 2,418—Logan							
McConnell Hospital	Gen	Indiv	15	1	5	39	9
Texarkana, 15,833—Miller							
Jamison Sanitarium	Gen	Indiv	20	8	6	92	24

CALIFORNIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Agnew, 300—Santa Clara							
Agnews State Hospital▲○	Ment	State	3,910	3,536	..	...	2,52
Ahwahnee, 50—Madera							
[illegible]	TB	Counties	105	100	..	...	12
[illegible]▲	Gen	NPAssn	97	79	22	1,187	5,824
Albany Hospital	Gen	Corp	27	26	12	520	2,177
Alcatraz,—San Francisco							
U. S. Penitentiary Hospital▲	Inst	USPHS	20	18	..	.	28
Alhambra, 51,284—Los Angeles							
Alhambra Hospital▲	Gen	Corp	60	36	18	984	3,766
Antioch, 10,983—Contra Costa							
Antioch General Hospital	Gen	Corp	24	14	8	243	1,054
Arcata, 3,720—Humboldt							
Trinity Hospital	Gen	Church	49	28	7	275	1,810
Arlington, 3,440—Riverside							
General Hospital of Riverside County▲	GenTb	County	321	300	14	387	4,078
Atwater, 2,872—Merced							
Bloss Memorial Hospital	Unit of Merced General Hospital, Merced						
Auberry, 200—Fresno							
Wish-i-ah Sanatorium	TB	County	116	103	..	...	110
Auburn, 4,647—Placer							
De Witt State Hospital	Ment	State	2,851	2,874	..	...	...
Highland General Hospital	Gen	Part	49	28	6	344	2,332
Placer County Hospital	InstGen	County	150	106	6	146	1,018
Avalon, 1,498—Los Angeles							
Santa Catalina Hospital	Gen	Indiv	9	3	3	28	261
Bakersfield, 34,540—Kern							
[illegible]	Gen	Indiv	30	24	..	...	1,521
[illegible]	Gen	County	664	551	99	2,528	11,479
[illegible]▲	Gen	Church	99	103	30	1,468	4,957
San Joaquin Hospital	Gen	Corp	49	30	..	4	1,656
Banning, 7,022—Riverside							
Southern Sierras Sanatorium	TB	Indiv	25	11	..	..	33
Bell, 15,206—Los Angeles							
Bell Mission Hospital	Gen	Corp	27	12	11	330	936
Belmont, 5,548—San Mateo							
[illegible]	N&M	Corp	85	72	.	...	590
[illegible]	TB	Corp	95	85	..	...	169
[illegible]	N&M	Corp	65	47	..	..	491
Berkeley, 113,217—Alameda							
[illegible]▲	Gen	NPAssn	112	96	42	2,081	6,268
[illegible]▲	Inst	State	153	47	..	...	3,200
Herrick Memorial Hosp.★+▲⊙	Gen	NPAssn	190	141	40	1,466	7,601
Brawley, 11,885—Imperial							
Desert Air Sanitarium	Conv	Part	24	8	..		17
Pioneer Memorial Hospital	Gen	NPAssn	74		21	Estab. 1950	
Burbank, 78,318—Los Angeles							
St. Joseph Hospital▲	Gen	Church	137	127	37	1,862	7,200
Camarillo, 300—Ventura							
Camarillo State Hospital	Ment	State	5,225	5,025	..	.	2,868

Key to symbols and abbreviations is on page 124

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Camp Cooke,—Santa Barbara							
U. S. Army Hospital▲	Gen	Army	225	...	Reopened		1950
Camp Roberts,—Monterey							
U. S. Army Hospital	Gen	Army	300	...	Reopened		1950
Camp Stoneman,—Contra Costa							
U. S. Army Hospital▲	Gen	Army	723	80	11	216	4,236
Carmel, 4,321—Monterey							
[illegible]▲	Gen	NPAssn	53	33	13	559	2,299
[illegible]							
[illegible]	Gen	Corp	49	28	10	456	2,309
Clovis, 2,757—Fresno							
[illegible]	Gen	Indiv	15	8	4	126	551
[illegible]							
[illegible]	Gen	NPAssn	40	24	14	259	1,808
[illegible]							
Colfax Hospital for the Tuberculous	TB	Indiv	34	21	..	...	33
Compton, 47,893—Los Angeles							
Compton Sanitarium+▲⊙	N&M	Corp	124	77	..	...	445
Las Campanas Hospital	Gen	Corp	46	29	16	841	2,217
Women's and Children's Hosp.	Gen	Indiv	17	10	7	96	1,186
Concord, 6,980—Contra Costa							
Concord Community Hospital	Gen	NPAssn	31	25	6	301	1,793
Corcoran, 3,103—Kings							
Corcoran Municipal Hospital	Gen	City	22	9	6	204	947
Corona, 10,219—Riverside							
Corona Hospital	Gen	Indiv	30	10	9	294	897
Coronado, 12,423—San Diego							
Coronado Hospital	Gen	NPAssn	30	19	8	207	1,022
Covina, 3,968—Los Angeles							
Covina Inter Community Hospital	Gen	NPAssn	60	54	12	584	2,729
Crescent City, 1,689—Del Norte							
Seaside Hospital	Gen	County	29	26	8	246	...
[illegible]							
[illegible]	Gen	Indiv	11	4	..	...	395
[illegible]	Gen	Corp	52	42	14	718	3,038
Delano, 8,672—Kern							
Delano Hospital	Gen	Indiv	23	14	7	203	1,077
Dos Palos, 1,385—Merced							
Dos Palos Hospital	Gen	Part	17	6	3	135	579
Downey, 15,000—Los Angeles							
Downey Community Hospital	Gen	Corp	50	29	10	683	2,292
Duarte, 2,000—Los Angeles							
Los Angeles Sanatorium+▲	TB	NPAssn	293	272	..	...	167
El Centro, 12,484—Imperial							
Imperial County Charity Hospital	Gen	County	94	67	5	176	1,594
Eldridge, 16—Sonoma							
[illegible]	MeDe	State	3,425	3,310	..	...	396
[illegible]							
[illegible] Dispensary	Gen	Navy	35	10	..	1	1,063
Escalon, 785—San Joaquin							
Pioneer Memorial Hospital	Gen	Indiv	15	7	3	67	463
Eureka, 22,913—Humboldt							
General Hospital	Gen	NPAssn	58	52	8	351	3,214
Humboldt County Community Hospital	Gen	County	193	165	6	78	1,304
Humboldt County Sanitarium	TB	County	65	39	..	...	102
St. Joseph Hospital	Gen	Church	72	60	20	635	3,292
Exeter, 4,074—Tulare							
[illegible]	[illegible]	NPAssn	44	22	8	220	1,539
[illegible]		County	127	117	7	197	1,095
[illegible]▲		USAF	500	144	19	265	2,115
[illegible]		NPAssn	56	45	9	328	2,862
[illegible]—Mendocino							
Redwood Coast Hospital▲	Gen	Corp	27	18	8	157	872
Fort Ord,—Monterey							
U. S. Army Hospital▲	Gen	Army	278	135	21	685	6,623
Fowler, 1,862—Fresno							
Fowler Municipal Hospital	Gen	City	12	7	5	165	482
French Camp, 600—San Joaquin							
San Joaquin General Hospital★+▲◇	Gen	County	668	539	40	1,382	8,227
Fresno, 90,618—Fresno							
[illegible]	Gen	NPAssn	155	120	24	1,699	7,990
[illegible]▲	Gen	County	639	512	24	1,685	10,368
[illegible]▲	Gen	Church	91	69	24	1,450	4,690
[illegible]	Gen	Vet	250	...	..	Estab.	1950
[illegible]—Orange							
[illegible]▲	Gen	Church	45	37	11	713	2,531
[illegible]	N&M	Corp	150	130	..	...	525
[illegible]	Gen	NPAssn	26	17	6	302	1,119
Glendale, [illegible]—Los Angeles							
[illegible]▲	Gen	NPAssn	77	64	19	557	3,616
[illegible]▲	Gen	Church	225	186	40	1,504	7,848
Physicians and Surgeons Hospital▲	Gen	NPAssn	110	95	35	1,899	5,876
Grass Valley, 5,257—Nevada							
Community Hospital	Gen	Indiv	19	14	6	187	850
W. C. Jones Memorial Hospital	Gen	Indiv	18	9	3	88	477
Hamilton,—Marin							
[illegible]▲	Gen	USAF	125	83	12	172	2,035
[illegible]							
[illegible] County [illegible]	Gen	County	225	145	16	448	2,822
[illegible]	Gen	Corp	30	27	8	221	1,068
[illegible]							
Hawthorne Hospital	Gen	Corp	42	32	10	620	2,591

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Hayward, 14,273—Alameda							
Hayward Hospital	Gen	Indiv	35	25	12	969	2,568
Healdsburg, 3,184—Sonoma							
Healdsburg General Hospital	Gen	Corp	25	11	6	160	774
Herlong,—Lassen							
U. S. Army Hospital	Gen	Army	40	9	5	116	778
Hollister, 4,890—San Benito							
Hazel Hawkins Memorial Hospital	Gen	NPAssn	18	14	6	267	984
[illegible]	[illegible]	County	50	45	4	23	241
[illegible]							
Imperial Valley Tuberculosis Sanatorium	TB	County	193	149	..	...	104
Hondo, 3,150—Los Angeles							
[illegible]	Ment	County	2,540	2,443	..	...	1,791
[illegible]		IA	29	15	5	33	462
[illegible]▲		Corp	65	42	18	904	3,350
Imola, 20—Napa							
Napa State Hospital+	Ment	State	4,404	4,074	..	...	1,665
Indio, 5,281—Riverside							
[illegible]	Gen	Indiv	21	12	6	258	1,084
[illegible]	Gen	Corp	30	14	6	87	774
In[illegible]							
[illegible]▲	Gen	NPAssn	62	62	22	1,659	5,182
[illegible]	Mat	Part	27	6	10	341	344
[illegible]	N&M	Indiv	200	196	..	...	180
Stony Brook Retreat	TB	County	139	136	..	...	210
King City, 2,338—Monterey							
King City Hospital	Gen	Corp	22	15	4	81	702
[illegible]							
[illegible]	Gen	Indiv	21	11	4	132	621
[illegible]							
Hillcrest Sanatorium	Unit of Olive View Sanatorium, Olive View						
La Jolla,—San Diego							
Scripps Memorial Hospital▲	Gen	NPAssn	56	46	9	582	2,466
Scripps Metabolic Clinic-Hospital	Metab	NPAssn	36	31	..	...	1,701
L[illegible]							
[illegible]	Gen	Part	46	26	6	191	1,566
L[illegible]							
[illegible]▲	Gen	NPAssn	34	27	8	441	1,788
La Vina, 35—Los Angeles							
La Vina Sanatorium	TB	NPAssn	51	50	..	...	62
Livermore, 4,262—Alameda							
Arroyo-Del Valley Sanatorium.	See Oakland						
[illegible]	N&M	Corp	120	103	..	...	658
[illegible]	Gen	Indiv	23	17	5	256	1,233
[illegible]▲	TB	Vet	439	405	..	...	746
[illegible]							
Buchanan Hospital	Gen	Indiv	34	21	9	370	1,445
Mason Hospital	Gen	Part	25	16	6	280	1,122
Loma Linda, 2,500—San Bernardino							
Loma Linda Sanitarium and Hospital★+▲◇	Gen	Church	166	111	24	763	4,968
Lompoc, 5,514—Santa Barbara							
Lompoc Hospital	Gen	NPAssn	44	18	11	187	1,202
Long Beach, 244,072—Los Angeles							
Bixby Knolls Hospital	Mat	Corp	24	11	22	665	779
Harriman Jones Clinic and Hospital▲	Gen	Part	48	33	16	320	1,674
Long Beach Community Hospital★▲	Gen	NPAssn	150	101	30	1,267	6,947
[illegible]	TB	County	280	146	..	...	171
[illegible] Hospital★▲	Gen	Church	250	171	55	1,937	9,117
Seaside Memorial Hosp.★+▲	Gen	NPAssn	370	275	55	1,669	13,822
Veterans Admin. Hospital★+▲	Gen	Vet	1,600	1,350	..	...	18,375
Los Angeles, 1,957,692—Los Angeles							
Alvarado Hospital	Gen	NPAssn	26	20	..	...	1,329
Angelus Hospital	Gen	NPAssn	122	73	38	603	2,124
Barlow Sanatorium+▲⊙	TB	NPAssn	104	99	..	...	107
California Babies' and Children's Hospital+	Chil	NPAssn	30	5	1	...	344
California Hospital★+▲◇	Gen	Church	317	268	48	2,623	14,511
Cedars of Lebanon Hosp.★+▲	Gen	NPAssn	310	284	50	2,333	12,179
Childrens Hospital★+▲⊙	Chil	NPAssn	203	150	..	...	6,827
Eye and Ear Hospital+	ENT	Corp	21	14	..	...	3,280
French Hospital▲	Gen	NPAssn	76	56	14	602	3,096
Hollywood-Leland Hospital	Gen	Corp	31	18	..	...	1,281
Hospital of the Good Samaritan★+▲◇	Gen	Church	400	346	55	1,928	12,749
Hygeia Sanatorium	Alcoh	Corp	22	7	..	...	291
Lincoln Hospital▲	Gen	NPAssn	33	23	11	666	1,825
Los Angeles County Hospital (Medical Unit)★+▲◇	Gen	County	3,122	2,664	185	7,903	70,337
Los Angeles County Jail Hospital	Inst	County	84	46	..	...	3,280
Los Angeles County Psychopathic Hospital	Unit of Los Angeles County Hospital						
Los Angeles Neurological Institute	N&M	Corp	42	21	..	...	494
[illegible]▲	Gen	Church	206	152	48	1,770	8,479
[illegible]	Gen	Corp	28	24	..	...	2,565
[illegible] Clinic	Chr	NPAssn	81	75	..	...	365
Orthopaedic Hospital+▲	Orth	NPAssn	75	66	..	...	2,447
Presbyterian Hospital-Olmsted Memorial★+▲◇	Gen	Church	300	228	65	2,178	11,546
Queen of Angels Hosp.★+▲◇	Gen	Church	502	445	110	4,766	22,608
Rose-Netta Hospital	Gen	Indiv	10	3	4	27	92
St. Vincent's Hospital★+▲◇	Gen	Church	230	187	60	1,808	9,224

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Santa Fe Coast Lines Hospital★+▲	Indus	NPAssn	196	134	..	...	4,081
Temple Hospital	Gen	Corp	120	85	22	460	3,684
Veterans Admin. Center+▲⊙	Ment	Vet	2,109	2,050	..	...	2,580
Veterans Admin. Center★+▲	Gen	Vet	1,449	1,226	.	..	22,296
White Memorial Hosp.★+▲◇	Gen	Church	207	176	28	1,505	9,001
Los Banos, 3,882—Merced							
City Clinic and Emergency Hospital	Gen	Church	14	7	3	112	446
Lynwood, 25,534—Los Angeles							
St. Francis Hospital▲	Gen	Church	160	153	48	3,069	10,073
Madera, 10,428—Madera							
Dearborn Hospital	Gen	Corp	29	20	4	424	1,587
Madera County Hospital	GenTb	County	135	95	8	299	2,033
Madera Sanitarium	Gen	Indiv	23	9	6	217	1,033
Manor,—Marin							
Arequipa Sanatorium	TB	NPAssn	55	48	..	. .	79
March Air Force Base,—Riverside							
U. S. Air Force Hospital▲	Gen	USAF	100	47	20	298	2,514
Mare Island,—Solano							
U. S. Naval Hospital▲	Gen	Navy	983	148	24	457	3,222
Martinez, 8,216—Contra Costa							
Contra Costa County Hospital	Gen	County	303	249	14	819	5,348
Martinez Community Hosp.	Gen	Corp	48	32	8	325	2,071
Marysville, 7,777—Yuba							
Rideout Memorial Hospital	Gen	Part	54	37	12	733	2,820
Yuba County Hospital	InstGen	County	100	85	11	100	1,411
Mather Field,—Sacramento							
U. S. Air Force Hospital▲	Gen	USAF	50	40	16	439	1,539
McCloud, 2,000—Siskiyou							
McCloud Hospital	Gen	NPAssn	25	8	5	108	557
Merced, 15,144—Merced							
Mater Misericordiae Hospital	Gen	Church	54	33	16	867	2,486
Merced General Hospital	GenTb	County	250	206	16	643	4,672
Modesto, 17,347—Stanislaus							
McPheeters Hospital	Gen	Indiv	39	34	7	584	2,303
Modesto State Hospital	Ment	State	2,902	2,891		...	267
Robertson Hospital	Gen	Corp	36	27	11	720	1,992
Stanislaus County Hospital	Gen	County	328	171	18	966	5,432
Moffett Field,—Santa Clara							
U. S. Naval Air Station Infirmary	Gen	Navy	15	8	..	...	885
Mojave, 750—Kern							
Mojave Hospital	Gen	Part	11	7	4	69	763
Monrovia, 20,274—Los Angeles							
Norumbega Heights Sanatorium	TB	Indiv	18	14	..	...	24
Pottenger Sanatorium and Clinic▲	TB	Indiv	140	117	..	...	162
Montebello, 21,754—Los Angeles							
Beverly Community Hospital▲	Gen	NPAssn	58	44	18	1,222	3,623
Monterey, 16,120—Monterey							
Monterey Hospital	Gen	Corp	75	36	13	290	2,186
Monterey Park, 20,113—Los Angeles							
Garfield Hospital▲	Gen	Corp	49	39	12	654	2,564
Mount Shasta, 1,898—Siskiyou							
Mount Shasta Hospital	Gen	Indiv	17	8	6	108	485
Murphys, 600—Calaveras							
Bret Harte Sanatorium+▲	TB	Counties	220	196	..	...	175
Napa, 13,542—Napa							
Parks Victory Memorial Hospital▲	Gen	NPAssn	48	34	10	497	2,023
National City, 21,132—San Diego							
Paradise Valley Sanitarium and Hospital▲◇	Gen	Church	113	67	22	539	3,052
Nevada City, 2,487—Nevada							
Miners Hospital	Gen	NPAssn	20	12	4	114	557
Nevada County Hospital	InstGen	County	100	70	3	15	1,080
Newhall, 1,890—Los Angeles							
Wildwood Sanatorium	Unit of Olive View Sanatorium, Olive View						
Newman, 1,879—Stanislaus							
West Side Hospital	Gen	Corp	20	14	8	189	852
Norwalk, 3,000—Los Angeles							
Norwalk State Hospital	Ment	State	2,658	2,468	..	...	1,504
Oakdale, 4,060—Stanislaus							
Oakdale Municipal Hospital	Gen	Indiv	32	16	8	311	1,343
Oakland, 380,576—Alameda							
Alameda County Hospitals							
Arroyo-Del Valle Sanat.+▲	TB	County	270	250	..	...	285
Fairmont Hospital of Alameda County+▲	ChrTb	County	810	746	..	2	1,054
Highland-Alameda County Hospital★+▲◇	Gen	County	486	351	20	2,000	12,426
Children's Hospital of the East Bay+▲⊙	Chil	NPAssn	142	92	..	...	5,405
East Oakland Hospital▲	Gen	Corp	80	58	20	1,565	5,219
Peralta Hospital+▲	Gen	NPAssn	156	137	25	1,662	8,645
Permanente Hospital ★+▲◇	Gen	NPAssn	315	213	47	1,995	12,895
Providence Hospital▲◇	Gen	Church	218	172	47	2,060	9,628
Samuel Merritt Hospital+▲◇	Gen	NPAssn	186	157	32	1,947	10,565
U. S. Naval Hospital★+▲	Gen	Navy	1,900	1,127	52	1,769	12,773
Veterans Admin. Hospital▲	Gen	Vet	800	585	..	...	7,263
Oceanside, 12,880—San Diego							
Oceanside Hospital	Gen	Corp	29	20	7	362	1,052
U. S. Naval Hospital★▲	Gen	Navy	850	334	30	919	5,449
Olive View,—Los Angeles							
Olive View Sanatorium+▲	TB	County	1,230	1,169	..	...	1,108
Orange, 10,053—Orange							
Orange County General Hospital★▲◇	Gen	County	529	418	20	489	4,530
St. Joseph Hospital▲	Gen	Church	155	117	36	1,452	6,569
Oroville, 5,345—Butte							
[illegible]	Gen	County	199	129	9	113	1,786
[illegible]							
[illegible]▲	Gen	Church	45	37	15	674	2,624
Palo Alto, 25,290—Santa Clara							
Palo Alto Hospital▲	Gen	NPAssn	190	167	40	2,539	10,953
Veterans Admin. Hospital+▲⊙	Ment	Vet	1,464	1,406	..	...	769
Pasadena, 104,087—Los Angeles							
Alta Vista Hospital	Gen	Church	65	43	10	348	2,257
Collis P. and Howard Huntington Memorial Hosp.★+▲◇	Gen	NPAssn	243	222	43	1,760	8,447
Las Encinas Sanitarium	N&M	Corp	115	111	..	...	331
St. Luke Hospital★▲	Gen	Church	170	137	60	2,269	8,207
Southern California Sanitarium for Nervous and General Diseases	See Las Encinas Sanitarium						
[illegible]	Mat	NPAssn	19	9	19	414	475
[illegible]							
[illegible]	Gen	County	25	...	8	Estab. 1950	
[illegible]							
Patton State Hospital+	Ment	State	4,466	4,040	..	...	2,077
Pittsburg, 12,662—Contra Costa							
[illegible]▲	[illegible]	NPAssn	70	46	16	703	3,732
[illegible]							
[illegible]	[illegible]	County	84	62	6	17	190
Placerville Sanatorium	Gen	Part	26	15	4	202	1,029
Pomona, 35,157—Los Angeles							
Pomona Valley Community Hospital▲	Gen	NPAssn	83	72	20	804	4,024
[illegible]							
[illegible]	Gen	Part	22	13	8	545	1,405
[illegible]							
Western Pacific Railroad Hospital	Gen	NPAssn	28	13	5	83	539
Quincy, 1,800—Plumas							
Plumas County Hospital	Gen	County	47	35	6	13	375
Red Bluff, 4,885—Tehama							
St. Elizabeth's Mercy Hospital	Gen	Church	50	45	8	348	1,675
Redding, 10,137—Shasta							
Shasta County Hospital	Gen	County	80	77	9	114	747
[illegible]							
[illegible]▲	Gen	NPAssn	73	49	20	471	2,668
Redwood City, 25,342—San Mateo							
Hassler Health Home	TB	CyCo	262	266	..	...	306
San Mateo County Tuberculosis Sanatorium	TB	County	86	73	..	...	89
Sequoia Hospital	Gen	NPAssn	106	...	30	Estab. 1950	
Reedley, 4,133—Fresno							
Reedley Hospital	Gen	NPAssn	30	19	7	409	1,674
Richmond, 99,218—Contra Costa							
Richmond Hospital▲	Gen	Indiv	70	58	22	1,390	5,374
[illegible]							
[illegible]	Gen	Indiv	47	22	10	188	1,591
[illegible]							
Riverside Community Hospital▲	Gen	NPAssn	140	105	42	1,134	6,049
Sherman Institute Hospital	Inst	IA	58	16	..	...	489
Rosemead, 5,500—Los Angeles							
Alhambra Sanatorium	N&M	Indiv	26	18	..	...	355
Ross, 2,169—Marin							
Ross General Hospital▲	GenTb	Corp	95	82	17	418	2,215
Sacramento, 135,761—Sacramento							
Mercy Hospital▲	Gen	Church	155	138	35	2,290	5,963
Sacramento County Hospital★▲◇	Gen	County	470	365	25	1,222	11,502
Sutter General Hospital+▲	Gen	NPAssn	253	199	..	...	9,754
Sutter Maternity Hospital▲	Mat	NPAssn	72	60	85	3,820	4,436
Salinas, 13,895—Monterey							
El Sausal Sanitarium	Unit of Monterey County Hospital						
Monterey County Hospital+▲	GenTb	County	255	244	10	608	3,105
Park Lane Hospital	Gen	Corp	58	43	15	694	3,294
San Bernardino, 62,792—San Bernardino							
St. Bernardine's Hospital▲	Gen	Church	125	99	34	1,224	6,236
San Bernardino County Charity Hospital★+▲◇	Gen	County	344	298	16	811	6,246
San Diego, 321,485—San Diego							
Collier Park Hospital	Mat	Church	20	15	11	133	133
Mercy Hospital★+▲◇	Gen	Church	332	274	100	4,426	14,461
Quintard Hospital	Gen	NPAssn	91	59	30	987	4,202
[illegible]							
[illegible]▲	GenTb	County	1,047	653	24	667	8,762
U. S. Naval Air Station Infirmary▲	Gen	Navy	48	16	30	723	1,268
U. S. Naval Hospital★+▲	Gen	Navy	1,800	1,300	54	2,322	20,965
Vauclain Home	Unit of San Diego County General Hosp.						
San Fernando, 12,858—Los Angeles							
Veterans Admin. Hospital▲	TB	Vet	410	341	..	...	381
San Francisco, 760,753—San Francisco							
Children's Hospital★+▲◇	Gen	NPAssn	250	191	60	2,282	8,218
Chinese Hospital	Gen	NPAssn	56	49	9	800	2,113
Doctors Hospital	Gen	Corp	60	23	..	...	1,322
Franklin Hospital★+▲◇	Gen	NPAssn	250	208	16	264	8,029
French Hospital★+▲◇	Gen	NPAssn	225	153	18	597	6,517
Greens' Eye Hospital+▲	ENT	Part	34	14	..	...	678
Hahnemann Hospital▲	Gen	NPAssn	79	66	..	...	3,423
Laguna Honda Home	InstGen	CyCo	900	892	..	...	899
Langley Porter Clinic-Hosp.+	Ment	State	97	64	..	...	297
Letterman Army Hospital★+▲	Gen	Army	1,800	1,456	26	1,154	13,340
Maimonides Health Center for the Chronic Sick	Chr	NPAssn	83	...	..	...	...
Mary's Help Hospital★+▲◇	Gen	Church	184	145	48	1,843	7,136
Mount Zion Hospital★+▲◇	Gen	NPAssn	188	143	30	947	5,873
Notre Dame Hospital	Gen	Church	156	127	..	...	2,428
[illegible]	N&M	Corp	34	18	..	...	999
[illegible]	MatCh	Church	86	34	10	139	175
[illegible]▲	Gen	NPAssn	300	242	49	1,317	12,095
[illegible]▲	Gen	Church	238	179	45	1,499	7,542
[illegible]▲	Gen	Church	220	171	25	684	8,120
[illegible]▲	Gen	Church	371	331	60	1,986	11,323
San Francisco Hospital★+▲⊙	Gen	CyCo	1,101	1,148	51	1,700	21,187

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
[illegible]	Gen	NPAssn	20	14	..	...	608
[illegible]	Unit of San Francisco Hospital						
[illegible]▲	Orth	NPAssn	60	60	..	...	266
[illegible]▲	Indus	NPAssn	450	388	..	...	7,478
Stanford University Hospitals★+▲○	Gen	NPAssn	356	283	52	2,022	11,206
U. S. Marine Hospital★+▲	GenTb	USPHS	484	375	..	...	5,197
University of California Hospital★+▲○	Gen	State	286	221	30	1,053	8,443
Veterans Admin. Hospital+▲	Gen	Vet	440	352	..	...	4,675
Sanger, 6,376—Fresno							
[illegible]	Gen	Corp	17	9	6	308	1,194
[illegible]▲	Gen	Church	135	102	8	220	3,079
[illegible]	TB	NPAssn	67	42	..	...	201
[illegible]▲	Gen	Church	115	100	35	1,943	6,599
[illegible]▲	Gen	NPAssn	185	145	56	2,675	9,199
[illegible]▲	GenTb	County	470	393	30	987	6,551
Santa Clara County Sanat.+	Unit of Santa Clara County Hospital						
San Leandro, 27,498—Alameda							
Fairmont Hospital of Alameda County	See Oakland						
San Luis Obispo, 14,162—San Luis Obispo							
Casa Loma Sanatorium	Unit of San Luis Obispo General Hospital						
French Hospital	Gen	Indiv	38	26	5	125	...
Mountain View Hospital	Gen	Indiv	27	23	8	466	1,501
San Luis Obispo General Hospital	GenTb	County	82	52	12	187	1,694
San Mateo, 41,536—San Mateo							
Community Hospital of San Mateo County+▲	Gen	County	200	143	10	374	3,765
Mills Memorial Hospital▲	Gen	Church	148	127	31	...	9,513
San Pedro,—Los Angeles							
San Pedro Community Hosp.▲	Gen	NPAssn	115	82	26	1,156	4,692
San Quentin, 328—Marin							
Charles L. Neumiller Hosp.▲	Inst	State	144	123	..	...	1,544
San Rafael, 13,830—Marin							
San Rafael General Hospital	Gen	Indiv	65	42	13	634	3,921
Santa Barbara, 44,764—Santa Barbara							
St. Francis Hospital▲	Gen	Church	91	66	19	519	3,679
Santa Barbara Cottage Hospital★+▲○	Gen	NPAssn	210	148	28	861	6,975
Santa Barbara General Hosp.▲	Gen	County	336	258	..	...	2,166
[illegible]	Gen	County	165	153	8	125	1,857
[illegible]	Gen	Church	57	39	17	342	2,893
[illegible]	Gen	Church	28	18	7	320	1,276
[illegible]▲	Gen	Church	49	36	14	704	2,159
Santa Monica, 71,299—Los Angeles							
St. John's Hospital★+▲	Gen	Church	108	108	40	2,358	6,353
[illegible]▲	Gen	Church	178	144	23	2,040	9,928
[illegible]	Gen	Church	90	...	30	Estab. 1950	
[illegible]▲	GenTb	County	472	395	20	340	3,414
[illegible]	Gen	NPAssn	40	33	5	366	1,844
[illegible]	Gen	Part	30	19	10	182	1,064
Selma, 5,955—Fresno							
Selma Sanitarium	Gen	Corp	35	21	12	336	2,998
Sonoma, 2,001—Sonoma							
Sonoma Valley Hospital District	Gen	NPAssn	23	15	4	134	708
Sonora, 2,437—Tuolumne							
Columbia Way Hospital	Gen	Indiv	40	20	10	127	1,104
Tuolumne County Hospital	InstGen	County	45	35	4	35	431
South Pasadena, 16,950—Los Angeles							
Braewood+	N&M	Corp	75	56	..	...	534
South San Francisco, 19,250—San Mateo							
South San Francisco Hosp.▲	Gen	Corp	36	16	10	111	991
Spadra, 275—Los Angeles							
Pacific Colony+	MeDe	State	2,050	1,968	..	...	303
Springville, 665—Tulare							
Tulare-Kings Counties Joint Tuberculosis Hospital+	TB	Counties	255	139	..	...	209
Stockton, 71,660—San Joaquin							
Dameron Hospital	Gen	NPAssn	82	63	16	978	4,370
St. Joseph's Hospital▲	Gen	Church	122	102	16	1,286	5,401
Stockton State Hospital▲	Ment	State	4,735	4,023	..	...	3,368
Susanville, 5,320—Lassen							
Riverside Hospital	Gen	Part	18	12	6	172	970
Talmage, 350—Mendocino							
Mendocino State Hospital▲	Ment	State	2,998	2,726	..	...	939
Tehachapi, 1,597—Kern							
Tehachapi Valley Hospital	Gen	Part	16	15	7	96	581
Torrance, 22,206—Los Angeles							
Harbor General Hospital★+▲	Gen	County	843	547	30	1,222	7,651
Jared Sidney Torrance Memorial Hospital▲	Gen	NPAssn	63	42	20	1,093	3,127
Tracy, 8,455—San Joaquin							
Tracy Community Memorial Hospital	Gen	NPAssn	42	18	12	315	1,670
Travis Air Force Base,—Solano							
U. S. Air Force Hospital	Gen	USAF	500	145	19	379	2,380
Trona, 775—San Bernardino							
Trona Hospital	Gen	NPAssn	24	11	6	131	688

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Tulare, 12,367—Tulare							
East Tulare Hospital	Mat	Indiv	12	5	12	513	560
Tulare Hospital	Gen	Indiv	24	12	2	5	986
Turlock, 6,221—Stanislaus							
Emanuel Hospital	Gen	Church	58	35	14	594	2,936
Lillian Collins Hospital	Gen	Indiv	39	17	15	116	874
Ukiah, 6,135—Mendocino							
[illegible]	Gen	Part	20	11	5	274	1,056
[illegible]▲	Gen	NPAssn	74	54	22	870	3,538
Vallejo, 23,164—Solano							
Permanente Hospital▲	Gen	NPAssn	190	166	21	480	3,190
U. S. Naval Hospital	See Mare Island						
Vallejo General Hospital	Gen	Corp	60	48	16	1,065	3,952
Van Nuys,—Los Angeles							
Valley Hospital	Gen	Corp	50	46	12	740	3,489
Ventura, 13,264—Ventura							
[illegible]	Unit of Ventura County Hospital						
[illegible]▲	Gen	NPAssn	54	43	12	534	2,586
[illegible]▲	GenTb	County	310	298	14	741	8,502
[illegible]▲	Inst	State	337	264	..	...	1,494
Visalia, 11,690—Tulare							
[illegible]	Gen	City	46	32	15	683	2,349
[illegible] Hospital	Gen	NPAssn	73	53	20	658	2,970
Weimar, 125—Placer							
Weimar Joint Sanatorium	TB	Counties	525	511	..	...	491
West Los Angeles,—Los Angeles							
Veterans Admin. Center	See Los Angeles						
Woodlake, 2,512—Tulare							
Sequoia Hospital	Gen	Indiv	9	3	4	114	338
Woodland, 9,318—Yolo							
Woodland Clinic Hospital▲	Gen	Part	74	59	12	525	3,001
[illegible]	Gen	County	150	136	8	282	1,930
[illegible]	[illegible]	Indiv	13	4	3	43	586
Yreka, 3,139—Siskiyou							
Siskiyou County General Hospital	Gen	County	120	106	14	274	1,799
Yuba City, 7,856—Sutter							
Sutter County Hospital	Gen	County	40	30	4	134	982
Yuba City Community Hosp.	Gen	Corp	18	14	6	248	1,153

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Artesia, 3,891—Los Angeles							
Pioneer Sanitarium	N&M	Indiv	64	60	..	...	30
Baldwin Park, 16,000—Los Angeles							
Sierra Lodge Sanitarium	N&M	Indiv	62	62	..	...	96
Belmont, 5,548—San Mateo							
[illegible]	Conv	NPAssn	12	11	..	...	17
[illegible] Institution for Men▲	Inst	State	48	15	..	...	390
Chula Vista, 15,844—San Diego							
Guest House	N&M	Corp	34	23	..	...	253
[illegible]	N&M	Part	34	16	..	...	478
[illegible]	Inst	NPAssn	24	2	..	..	246
[illegible]	N&M	Indiv	85	80	..	...	234
[illegible]	TB	Church	120	110	..	...	74
Eureka, 22,913—Humboldt							
Hmboldt County Isolation Hospital	Iso	County	16	5	..	...	192
Gardena, 14,418—Los Angeles							
Alondra Nursing Home	Conv	Indiv	15	13	..	...	65
Bellevue Nursing Home	Conv	Part	28	21	..	..	117
La Crescenta, 3,000—Los Angeles							
Kimball Sanitarium	N&M	Part	35	22	..	...	175
Long Beach, 244,072—Los Angeles							
California Sanitarium	Conv	Indiv	50	44	..	...	143
Los Angeles, 1,957,692—Los Angeles							
Accadia Sanitarium-Hospital	Conv	Indiv	32	16	..	...	167
Booth Memorial Hospital	Mat	Church	13	9	8	194	259
Chase Sanitarium	Conv	Part	22	21	..	...	79
Florence Crittenton Home	Mat	NPAssn	30	26	20	59	81
Madison Lodge Sanitarium	Conv	Corp	34	29	..	...	230
Paradise Sanitarium and Hospital	Conv	Indiv	46	43	..	...	185
Resthaven	N&M	NPAssn	52	40	..	...	302
St. Anne's Maternity Hosp.▲	Mat	Church	42	40	20	261	343
Santa Maria Maternity Hospital and Clinic	Mat	Church	12	8	12	248	246
Twentieth Century Sanitarium	N&M	Indiv	56	56	..	...	40
Monrovia, 20,274—Los Angeles							
Maryknoll Sanatorium	TB	Church	44	43	..	...	36
National City, 21,132—San Diego							
Hillcrest Manor	N&M	Indiv	50	50	..	...	69
Oakland, 380,576—Alameda							
Booth Memorial Hospital	Mat	Church	15	9	30	238	300
Pacoima,—Los Angeles							
Independent Order of Foresters Tuberculosis Sanitarium	TB	NPAssn	50	18	..	...	19
Pasadena, 104,087—Los Angeles							
Sierra Madre Lodge	N&M	Corp	10	4	..	...	120
Rosemead, 5,500—Los Angeles							
[illegible]	N&M	Indiv	33	22	..	...	205
[illegible]	MeDe	Corp	75	64	..	...	13

CALIFORNIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
San Diego, 321,485—San Diego							
Children's Convalescent Hosp.	Conv	NPAssn	49	31	..	..	76
Fraser Hall Hospital	Conv	Indiv	25	19	..	...	250
San Francisco, 760,753—San Francisco							
Garden Hospital▲	Chr	NPAssn	100	100	..	...	53
San Gabriel, 20,204—Los Angeles							
Mission Lodge Sanitarium	N&M	Part	76	75	..	...	14
Monterey Sanitarium	N&M	Part	91	91	..	...	190
San Mateo, 41,536—San Mateo							
Children's Health Home	Conv	NPAssn	28	20	..	...	14
Santa Monica, 71,299—Los Angeles							
Loamshire Convalescent *Hospital and Rest Home*	*Unit of Santa Monica Hospital*						
Stanford University, 720—Santa Clara							
Stanford Convalescent Home	Chil	NPAssn	80	47	..	...	120
Wilmar, 8,000—Los Angeles							
Ingleside Lodge	N&M	NPAssn	57	25	..	...	297

COLORADO

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Akron, 1,417—Washington							
Washington County Public Hospital	Gen	County	15	7	5	100	1,048
Alamosa, 5,342—Alamosa							
Alamosa Community Hospital	Gen	Church	48	43	21	492	3,920
Aspen, 777—Pitkin							
Pitkin County Public Hospital	Gen	County	10	3	3	38	182
Boulder, 19,916—Boulder							
Boulder-Colorado Sanitarium and Hospital▲◇	Gen	Church	101	58	10	262	2,247
Community Hospital▲	Gen	NPAssn	45	37	12	474	2,329
County of Boulder General Hospital	Gen	County	44	27	4	41	794
Brush, 2,429—Morgan							
Eben-Ezer Hospital	Gen	Church	44	22	12	317	1,428
Camp Carson,—El Paso							
U. S. Army Hospital	Gen	Army	300	53	10	259	2,523
Canon City, 6,313—Fremont							
St. Thomas More Hospital	Gen	Church	44	30	6	173	1,240
Cheyenne Wells, 1,150—Cheyenne							
St. Joseph Hospital	Gen	Church	29	15	6	90	745
Company Hospital	Indus	NPAssn	11	3	..	...	125
Collbran, 301—Mesa							
Plateau Valley Congregational Hospital	Gen	Church	13	5	4	35	227
Colorado Springs, 45,268—El Paso							
Cragmor Sanatorium	TB	NPAssn	125	45	..	..	69
Emory John Brady Hospital	N&M	Part	150	140	..		289
Glockner-Penrose Hosp.★+▲◇	Gen Tb	Church	220	193	25	780	4,975
Memorial Hospital▲◇	Gen Iso	City	90	62	16	465	3,540
St. Francis Hospital+▲	Gen Tb	Church	160	102	16	368	3,843
Union Printers Home and Tuberculosis Sanitarium	Gen Tb	NPAssn	244	153	..	...	170
Cortez, 2,651—Montezuma							
Southwest Memorial Hospital	Gen	NPAssn	42	21	13	300	2,055
Craig, 3,075—Moffat							
Memorial Hospital	Gen	NPAssn	18	...	6	Estab. 1950	
Cripple Creek, 2,358—Teller							
Cripple Creek Hospital	Gen	NPAssn	25	4	6	31	219
Del Norte, 2,037—Rio Grande							
St. Joseph's Hospital	Gen	Church	45	30	11	182	1,753
Delta, 4,077—Delta							
Delta Memorial Hospital	Gen	NPAssn	27	12	10	182	699
Denver, 412,856—Denver							
Bethesda Sanatorium	N&M	Church	75	27	..	...	65
Beth Israel Hospital▲	Gen	NPAssn	50	44	10	216	1,980
Childrens Hospital+▲◇	Chil	NPAssn	210	172	15	...	11,507
Colorado General Hosp.★+▲◇	Gen	State	272	219	42	664	5,187
Colorado Psychopathic Hospital+▲	Ment	State	78	84	..	...	887
Denver General Hospital★+▲◇	Gen Tb	CyCo	496	357	30	728	7,796
Fitzsimons Army Hospital★+▲	Gen	Army	2,500	2,073	20	1,015	15,002
General Rose Memorial Hospital★▲	Gen	NPAssn	244	194	40	1,318	9,925
Mercy Hospital★+▲◇	Gen	Church	250	191	35	1,053	9,792
Mount Airy Sanitarium▲	N&M	Part	70	59	..	...	1,469
National Jewish Hospital+▲⊙	TB	NPAssn	235	237	..	...	300
Porter Sanitarium and Hospital★▲◇	Gen	Church	140	133	23	947	5,658
Presbyterian Hospital★+▲◇	Gen	Church	170	168	35	1,687	7,715
Robert W. Speer Memorial Hospital for Children	Unit of Denver General Hospital						
St. Anthony Hospital★+▲◇	Gen	Church	235	184	30	1,554	9,050
St. Joseph's Hospital★+▲◇	Gen	Church	338	283	60	2,478	12,764
St. Luke's Hospital★+▲◇	Gen	Church	279	268	50	2,488	11,232
Steele Memorial Hospital	Unit of Denver General Hospital						
University of Denver Hospital	Inst	NPAssn	25	9	..	...	545
Durango, 7,437 La Plata							
La Plata County Hospital	Gen	County	30	20	6	160	985
Mercy Hospital▲◇	Gen	Church	62	53	12	392	3,916
Edgewater (Denver P. O.), 2,590—Jefferson							
Sands House	Cancer	NPAssn	33	25	..	...	150
Englewood, 16,619—Arapahoe							
Federal Correctional Inst	Inst	USPHS	25	7	..	...	369
Swedish National Sanatorium	TB	NPAssn	72	64	..	...	108
Estes Park, 1,594—Larimer							
Estes Park Hospital	Gen	Indiv	8	1	3	10	250
Flagler, 506—Kit Carson							
Flagler Hospital	Gen	Indiv	12	5	6	91	332
Florence, 2,765—Fremont							
St. Joseph Hospital	Gen	Church	28	12	6	67	601

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Fort Collins, 14,932—Larimer							
Larimer County Hospital▲	Gen	County	76	56	21	876	3,052
Fort Logan,—Arapahoe							
Veterans Admin. Hospital+▲	Gen	Vet	326	290	..	...	3,608
Fort Lyon, 1,180—Bent							
Veterans Admin. Hospital+▲	Ment	Vet	881	845	..	...	266
Fort Morgan, 5,292—Morgan							
Fort Morgan Hospital	Gen	Indiv	25	16	8	164	742
Fruita, 1,466—Mesa							
Lower Valley Hospital	Gen	Corp	14	6	5	73	392
Glenwood Springs, 2,402—Garfield							
Dr. Porter's Hospital	Gen	Indiv	18	12	7	126	654
Glenwood Springs Hospital	*Gen*	*NPAssn*	*35*	*11*	*5*	96	737
Grand Junction, 14,454—Mesa							
St. Mary's Hospital▲◇	Gen	Church	75	73	15	762	3,742
Veterans Admin. Hospital	Gen	Vet	152	108	..	...	1,940
Greeley, 20,286—Weld							
Weld County Public Hosp.▲	Gen	County	108	81	26	1,013	4,298
Haxtun,—Phillips							
Northeast Colorado Memorial Hospital	Gen	NPAssn	25	5	6	21	272
Hayden, 640—Routt							
Solandt Memorial Hospital	Gen	NPAssn	16	9	7	172	467
Holyoke, 1,541—Phillips							
Phillips County Hospital	Gen	County	15	5	5	112	376
Ignacio, 555—La Plata							
Edward T. Taylor Indian Hospital	Gen	IA	21	10	4	53	311
Julesberg, 1,938—Sedgwick							
Sedgwick County Memorial Hospital	Gen	County	18	...	8	Estab. 1950	
La Junta, 7,679—Otero							
Mennonite Hospital and Sanitarium▲◇	Gen	Church	108	77	22	736	3,302
Lakewood (Denve							
Craig Colony			42	38	..	...	34
Lamar, 7,715—Prowers							
Sacred Heart Hospital	Gen	Church	55	25	16	511	1,737
Leadville, 4,078—Lake							
St. Vincent's Hospital	Gen	Church	40	16	10	192	839
Longmont, 8,061—Boulder							
Longmont Hospital and Clinic▲	Gen	Corp	36	24	6	255	1,533
St. Vrain Hospital	Gen	NPAssn	28	15	7	105	790
Meeker, 1,649—Rio Blanco							
Pioneers Hospital	Gen	County	18	...	4	Estab. 1950	
Monte Vista, 3,262—Rio Grande							
Lutheran Community Hosp.	Gen	Church	35	18	11	215	1,382
Montrose, 4,884—Montrose							
Montrose Memorial Hospital	Gen	NPAssn	50	...	12	Estab. 1950	
Ouray, 1,077—Ouray							
San Juan Miners' Hospital	Gen	NPAssn	16	4	3	35	161
Pueblo, 63,561—Pueblo							
Colorado State Hospital+▲⊙	Ment	State	5,409	5,170	..	...	1,095
Corwin Hospital★+▲◇	Gen	Church	206	142	22	870	6,386
Parkview Episcopal Hosp.▲	Gen	Church	144	80	24	591	4,592
St. Mary Hospital▲◇	Gen	Church	130	101	28	654	5,098
Woodcroft Hospital▲	N&M	Corp	102	90	..	...	612
Rocky Ford, 4,079—Otero							
Physicians Hospital	Gen	Corp	12	10	5	72	760
Salida, 4,516—Chaffee							
Denver and Rio Grande Western Hospital▲	Gen	NPAssn	93	63	8	188	2,601
Spivak, 350—Jefferson							
Sanatorium of the Jewish Consumptives' Relief Society▲	TB	NPAssn	250	158	..	...	73
Steamboat Springs, 1,897—Routt							
Routt County Memorial Hospital	Gen	NPAssn	22	...	8	Estab. 1950	
Sterling, 7,470—Logan							
Good Samaritan Hospital	Gen	Church	35	12	10	165	1,528
St. Benedict Hospital	Gen	Church	32	23	14	359	1,709
Trinidad, 12,206—Las Animas							
Mount San Rafael Hospital▲◇	Gen	Church	70	35	12	515	2,127
Walsenburg, 5,567—Huerfano							
Lamme Hospital	Gen	Part	22	13	5	123	594
Wheat Ridge, 3,500—Jefferson							
Lutheran Sanatorium▲	TB	NPAssn	110	91	..	...	71
Wray, 2,185—Yuma							
Wray Community Hospital	Gen	NPAssn	17	5	8	156	886
Yuma, 1,870—Yuma							
Yuma Community Hospital	Gen	NPAssn	22	7	5	71	540

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Boulder, 19,916—Boulder							
Mesa Vista Sanatorium	TB	Part	49	38	..	...	73
Denver, 412,856—Denver							
Booth Memorial Hospital	Mat	Church	8	4	18	99	138
Florence Crittenton Home and Hospital	Mat	NPAssn	80	12	9	180	197
St. Francis Sanatorium	TB	Church	21	21	..	...	39
Fort Collins, 14,932—Larimer							
Students Health Service Hosp.	Inst	State	28	6	..	...	644
Golden, 5,176—Jefferson							
Hospital-State Industrial School for Boys	Inst	State	25	3	..	...	147
Grand Junction, 14,454—Mesa							
State Home and Training School for Mental Defectives	McDe	State	650	530	..	...	70
Gunnison, 2,729—Gunnison							
Gunnison Community Hosp.	Gen	Part	18	8	6	122	599
	Inst	State	40	8	..	...	39

COLORADO—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Rangely, 5,000—Rio Blanco							
Rangely Community Hospital.	Gen	NPAssn	8	4	4	57	359
Ridge, 100—Jefferson							
State Home and Training School for Mental Defectives.	MeDe	State	345	340	..	...	21

CONNECTICUT

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bridgeport, 159,352—Fairfield							
Bridgeport Hospital★+▲◇	Gen	NPAssn	366	326	60	2,374	11,220
Englewood Hospital	IsoVen	City	150	27	..	...	278
Park City Hospital	Gen	NPAssn	35	22	..	...	1,161
St. Vincent's Hospital★+▲◇	Gen	Church	345	251	60	2,441	12,106
Bristol, 35,873—Hartford							
Bristol Hospital▲	Gen	NPAssn	160	93	30	701	4,868
Cromwell, 4,288—Middlesex							
Cromwell Hall	Nerv	Corp	33	16	..	...	61
Danbury, 22,424—Fairfield							
Danbury Hospital★▲◇	Gen	NPAssn	168	130	28	945	5,424
Federal Correctional Institution	Inst	USPHS	33	16	..	...	310
Derby, 10,264—New Haven							
Griffin Hospital▲	Gen	NPAssn	92	72	26	923	3,564
Greens Farms, 275—Fairfield							
Hall-Brooke Sanitarium	N&M	Corp	60	47	..	...	195
Greenwich, 40,546—Fairfield							
Blythewood	N&M	Corp	60	33	..	...	87
Greenwich Hospital★▲◇	Gen	NPAssn	128	92	23	609	4,151
St. Luke's Convalescent Hospital	Conv	NPAssn	115	83	..	...	763
Hartford, 177,073—Hartford							
Avery Convalescent Hospital	Unit of Hartford Hospital						
Cedarcrest Sanatorium▲	TB	State	257	239	..	...	174
Hartford Hospital★+▲◇	Gen	NPAssn	869	646	150	5,649	27,487
Institute of Living (Neuro-Psychiatric Institute of the Hartford Retreat)+▲	N&M	NPAssn	484	410	..	...	809
J. J. McCook Memorial Hospital★▲⊙	GenIso	City	265	192	12	141	4,147
Mount Sinai Hospital▲	Gen	NPAssn	115	73	24	200	2,097
St. Francis Hospital★+▲◇	Gen	Church	535	527	62	2,071	18,752
Lakeville, 1,800—Litchfield							
Hotchkiss School Infirmary	Inst	NPAssn	36	13	..	...	576
Manchester, 33,906—Hartford							
[illegible]▲	Gen	NPAssn	155	149	19	715	5,392
[illegible]▲	Gen	NPAssn	121	105	30	1,168	5,404
[illegible]▲	TB	State	359	272	..	...	286
[illegible]▲	Ment	State	2,990	3,071	..	...	1,035
[illegible]▲	Gen	NPAssn	150	109	30	1,063	5,317
[illegible]	Gen	NPAssn	50	30	15	414	2,323
[illegible]▲	Gen	NPAssn	267	179	38	1,687	8,388
New Canaan, 7,967—Fairfield							
Silver Hill Foundation+	N&M	NPAssn	45	42	..	...	281
New Haven, 163,344—New Haven							
Grace-New Haven Community Hospital							
Grace Unit★+▲◇	Gen	NPAssn	163	120	37	1,049	5,836
New Haven Unit★+▲◇	Gen	NPAssn	542	432	53	2,081	14,577
Hospital of St. Raphael★+▲◇	Gen	Church	370	301	60	2,601	12,018
Newington, 8,989—Hartford							
Newington Home and Hospital for Crippled Children+▲O	Orth	NPAssn	178	149	..	...	267
Veterans Admin. Hospital+▲	Gen	Vet	352	285	..	...	4,752
New London, 30,367—New London							
Lawrence and Memorial [illegible]	Gen	NPAssn	233	182	58	1,538	6,985
[illegible]▲	Inst	USPHS	32	7	..	...	316
[illegible]	Gen	NPAssn	26	14	6	165	622
[illegible]▲	Ment	State	2,830	2,634	..	...	963
Norwalk, 49,458—Fairfield							
Norwalk Hospital★+▲◇	Gen	NPAssn	247	212	40	1,352	8,785
Norwich, 23,382—New London							
[illegible]▲	Ment	State	2,162	2,799	..	...	945
[illegible]▲	TB	State	422	365	..	...	392
[illegible]▲◇	Gen	NPAssn	143	98	45	1,131	5,069
[illegible] Manor	N&M	Indiv	42	40	..	...	234
Putnam, 8,165—Windham							
Day Kimball Hospital▲	Gen	NPAssn	70	54	14	685	2,778
Rockville, 8,020—Tolland							
Rockville City Hospital	Gen	NPAssn	50	24	14	105	939
Sharon, 1,870—Litchfield							
Sharon Hospital▲	Gen	NPAssn	55	30	18	332	1,517
Shelton, 12,384—Fairfield							
Laurel Heights State Tuberculosis Sanatorium+▲O	TB	State	261	257	..	...	198
Southbury, 3,799—New Haven							
Southbury Training School	MeDe	State	1,403	1,400	..	...	81
Southington, 5,948—Hartford							
Bradley Memorial Hospital	Gen	NPAssn	50	35	10	511	1,989
Stafford Springs, 3,390—Tolland							
Cyril and Julia C. Johnson Memorial Hospital▲	Gen	NPAssn	50	31	12	279	1,512

CONNECTICUT—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Stamford, 73,584—Fairfield							
[illegible]	N&M	Corp	50	34	..	...	58
[illegible]▲	Gen	Church	99	71	30	1,023	3,794
[illegible]	N&M	Corp	145	152	..	...	314
[illegible]▲	Gen	NPAssn	232	185	27	803	7,694
[illegible]							
[illegible]+▲	Gen	NPAssn	128	95	26	762	4,415
[illegible]	TB	NPAssn	140	133	..	...	169
Waterbury, 104,242—New Haven							
St. Mary's Hospital★+▲◇	Gen	Church	327	271	57	1,665	12,272
Waterbury Hospital★+▲◇	Gen	NPAssn	324	237	68	1,572	11,886
Waterford, 9,090—New London							
The Seaside	TbOrth	State	145	117	..	...	17
Westport, 11,568—Fairfield							
Westport Sanitarium	N&M	Corp	100	67	..	...	265
Williamantic, 13,565—Windham							
Windham Community Memorial Hospital▲	Gen	NPAssn	96	59	22	536	3,287
Winsted, 8,729—Litchfield							
Litchfield County Hospital▲	Gen	NPAssn	71	47	16	272	1,893

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
East Lyme, 3,338—New London							
Ida Thompson Hospital	Unit of Connecticut State Farm for Women, Niantic						
[illegible]							
[illegible]	Chr	City	72	54	2	...	88
Mansfield State Training School and Hospital	MeDe	State	1,400	1,272	..	...	89
Meriden, 43,747—New Haven							
Connecticut School for Boys Hospital	Inst	State	37	7	..	...	245
New Haven, 163,344—New Haven							
Yale Infirmary	Inst	NPAssn	40	13	..	...	1,433
Niantic, 1,312—New London							
Connecticut State Farm for Women	Inst	State	243	...	5	...	103
Norwalk, 49,458—Fairfield							
St. Mary's Hospital for Children	Conv	Church	40	37	..	...	300
Rocky Hill, 4,958—Hartford							
State of Connecticut Veterans' Home and Hosp.	Inst	State	548	387	..	...	2,902
Waterbury, 104,242—New Haven							
Connecticut Children's Hosp.	MeDe	NPAssn	131	130	..	...	78
West Hartford, 44,401—Hartford							
St. Agnes Home	InstMat	Church	175	34	6	117	126
West Suffield, 700—Hartford							
Restland Farm	Conv	Corp	40	10	..	...	59
Wethersfield, 12,509—Hartford							
Connecticut State Prison Hospital	Inst	State	31	18	..	...	180

DELAWARE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Delaware City, 1,364—New Castle							
Governor Bacon Health Center	Ment	State	540	272	..	...	540
Dover, 6,322—Kent							
Kent General Hospital▲	Gen	NPAssn	60	54	10	507	3,006
Farnhurst, 500—New Castle							
Delaware State Hospital+▲⊙	Ment	State	1,330	1,311	..	...	512
Lewes, 2,891—Sussex							
Beebe Hospital▲◇	Gen	NPAssn	100	60	16	353	2,580
Marshallton, 1,500—New Castle							
Brandywine Sanatorium	TB	State	112	108	..	...	113
[illegible]	TB	State	68	57	..	...	47
[illegible]▲	Gen	NPAssn	100	62	22	809	2,959
Smyrna, 2,335—Kent							
Delaware State Welfare Home Hospital	Inst	StateCo	378	349	7	...	216
Wilmington, 109,907—New Castle							
Alfred I. duPont Institute of the Nemours Foundation+▲	OrthChil	NPAssn	85	45	..	...	231
Delaware Hospital★+▲◇	Gen	NPAssn	382	282	56	2,165	10,916
Doris Memorial Hospital○	Unit of Wilmington General Hospital						
Gross Private Hospital	Gen	Corp	15	7	6	90	320
Memorial Hospital★+▲◇	Gen	NPAssn	210	144	38	1,011	5,773
St. Francis Hospital▲◇	Gen	Church	115	66	30	473	2,984
Veterans Admin. Hospital	Gen	Vet	300	200	..	...	1,460
Wilmington General Hospital★+▲◇	Gen	NPAssn	184	120	39	1,432	5,833

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Stockley, 68—Sussex							
Delaware Colony	MeDe	State	500	500	..	...	33

DISTRICT OF COLUMBIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Washington, 797,670							
Central Dispensary and Emergency Hospital★+▲◇	Gen	NPAssn	300	203	..	...	7,240
Children's Hospital+▲O	Chil	NPAssn	227	140	..	...	9,374
Columbia Hospital for Women and Lying-In Asylum+▲	MatGyn	NPAssn	125	95	87	3,572	7,026
Doctors Hospital★+▲	Gen	Corp	237	212	61	1,645	9,298

DISTRICT OF COLUMBIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Eastern Dispensary and Casualty Hospital+▲...	Gen	NPAssn	135	110	..	...	4,331
Episcopal Eye, Ear and Throat Hospital+▲ .	ENT	Church	100	61			6,036
Freedmen's Hospital★+▲◇ ..	GenTb	Fed	482	424	51	2,588	8,927
Gallinger Municipal Hospital★+▲◇..	Gen	City	1,416	1,002	129	4,871	19,521
Garfield Memorial Hospital★+▲◇..	Gen	NPAssn	302	207	112	2,497	9,871
Georgetown University Hospital★+▲◇	Gen	Church	360	252	48	1,819	12,210
George Washington University Hospital★+▲.. .	Gen	NPAssn	400	306	70	2,858	13,239
National Homeopathic Hosp.▲,	Gen	NPAssn	62	33	23	392	1,912
Providence Hospital★+▲◇	Gen	Church	291	221	50	2,483	10,789
Saint Elizabeths Hosp.★+▲◇	MentGen	Fed	6,590	6,587	11	5	1,648
Sibley Memorial Hosp.★+▲◇.	Gen	Church	356	182	96	2,811	11,070
Tuberculosis Sanatorium (Glenn Dale Sanatorium, Glenn Dale, Md. P. O.)+▲. .	TB	City	617	588	.		499
U. S. Air Force Hospital .	Gen	USAF	150	79	23	594	3,410
U. S. Soldiers Home Hosp.▲ .	Inst	Fed	379	305	.		1,604
Veterans Admin. Hospital+▲ .	Gen	Vet	335	279	..	.	3,418
Walter Reed Army Hosp.★+▲	Gen	Army	1,747	1,788	28	1,181	11,672
Washington Sanitarium and Hospital★▲◇	Gen	Church	226	181	30	755	5,108

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Washington, 797,670							
Home for the Aged and Infirm.	Inst	City	500	461	..	...	146
National Training School for Boys Hospital	Inst	Fed	30	5	..	...	410
Theodora Snow Memorial Hospital	Mat	NPAssn	12	8	28	145	203
Washington Home for Incurables	Incur	NPAssn	173	173	.	. .	45

FLORIDA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Apalachicola, 3,197—Franklin							
Franklin County Hospital..	Gen	County	14	8	5	97	513
Arcadia, 4,770—De Soto							
G. Pierce Wood Memorial Hospital	Ment	State	979	872	..	...	14
Avon Park, 4,639—Highlands							
Walker Memorial Sanitarium and Hospital	Gen	NPAssn	80	18	6	86	766
Bartow, 8,675—Polk							
Bartow General Hospital	Gen	City	30	16	9	296	1,592
Polk County Hospital . .	Gen	County	80	48	6	30	1,467
Bay Pines,—Pinellas							
Veterans Admin. Center▲	Gen	Vet	395	385		..	3,845
Belle Glade, 6,889—Palm Beach							
Belle Glade Memorial Hospital	Gen	CyCo	60	21	16	226	805
Bradenton, 13,609—Manatee							
Bradenton General Hospital	Gen	Part	30	22	8	182	1,155
Century, 2,000—Escambia							
Turberville Hospital▲ .	Gen	NPAssn	40	26	5	194	1,380
Chattahoochee, 8,466—Gadsden							
Florida State Hospital▲◇ .	Ment	State	6,222	5,674	5	33	2,498
Clearwater, 15,535—Pinellas							
Morton F. Plant Hospital▲ ..	Gen	NPAssn	75	62	15	522	3,012
Clermont, 2,143—Lake							
South Lake Memorial Hospital	Gen	NPAssn	9	5	4	105	388
Coral Gables, 19,668—Dade							
Coral Gables Hospital. .	Gen	Indiv	45	31	14	317	1,875
Doctors' Hospital	Gen	Corp	100	75	24	1,187	5,437
Veterans Admin. Hospital+▲..	Gen	Vet	450	429	..	...	4,276
Dade City, 3,792—Pasco							
Jackson Memorial Hospital	Gen	County	25	10	8	196	629
D[illegible]							
[illegible] ▲	Gen	NPAssn	141	93	30	706	4,797
De Funiak Springs, 3,065—Walton							
Lakeside Hospital. .	Gen	Part	40	14	10	233	895
Walton County Hospital ..	Gen	County	25	11	8	63	651
De Land, 8,536—Volusia							
De Land Memorial Hospital	Gen	NPAssn	44	17	10	249	1,156
Dunedin, 3,162—Pinellas							
Mease Hospital	Gen	NPAssn	24	11	4	71	682
Eglin Air Force Base,—Okaloosa							
U. S. Air Force Hospital. ...	Gen	USAF	125	85	22	431	4,169
Eustis, 4,011—Lake							
Waterman Memorial Hospital.	Gen	NPAssn	78	31	16	230	1,541
Fernandina, 4,388—Nassau							
Nassau General Hospital . .	Gen	County	37	16	12	203	1,194
Fort Lauderdale, 36,000—Broward							
Broward General Hospital▲	Gen	City	142	100	30	894	5,432
Fort Myers, 13,145—Lee							
Jones Walker Hospital.... .	Unit of Lee Memorial Hospital						
Lee Memorial Hospital.......	Gen	NPAssn	52	43	12	439	2,489
Fort Walton, 2,456—Okaloosa							
H. C. White Hospital	Gen	Indiv	10	3	4	56	541
Gainesville, 26,577—Alachua							
Alachua General Hospital▲◇ .	Gen	County	120	84	30	987	4,846
University of Florida Infirmary..	Inst	State	53	10	..	...	1,288
Gulfport, 3,699—Pinellas							
Cedars Hospital......	Gen	Indiv	36	20	..	...	368
Hollywood, 14,135—Broward							
Hollywood Hospital..........	Gen	Corp	57	22	8	119	1,461
Homestead, 4,554—Dade							
James Archer Smith Hospital.	Gen	NPAssn	22	12	8	164	769

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Jacksonville, 203,404—Duval							
Brewster Hospital★+▲.	Gen	Church	140	68	35	1,072	2,473
Duval Medical Center★+▲⊙....	Gen	County	330	255	34	998	7,499
Hope Haven Hospital+....	OrthChil	NPAssn	100	54	..	...	414
Negro Tuberculosis Hospital...	TB	CyCo	48	34	..	...	64
Riverside Hospital+▲◇.......	Gen	NPAssn	50	44	12	193	1,886
St. Luke's Hospital★+▲.......	Gen	NPAssn	180	147	30	1,625	7,498
St. Vincent's Hospital★+▲◇....	Gen	Church	239	130	50	2,636	10,873
U. S. Naval Air Station Infirmary....................	Gen	Navy	104	8	..	...	1,160
U. S. Naval Hospital★▲........	Gen	Navy	420	164	42	789	4,654
Key West, 21,724—Monroe							
U. S. Naval Hospital▲.........	Gen	Navy	253	130	20	491	2,581
Kissimmee, 4,329—Osceola							
Kissimmee Hospital...........	Gen	Indiv	40	17	7	112	821
Lake City, 7,469—Columbia							
Lake Shore Hospital...........	Gen	City	63	40	24	363	2,049
Veterans Admin. Hospital▲....	Gen	Vet	378	318	..	...	2,996
Lakeland, 30,846—Polk							
Morrell Memorial Hospital▲...	Gen	City	150	87	30	730	4,352
Lake Wales, 6,802—Polk							
Lake Wales Hospital▲...... ...	Gen	NPAssn	50	14	18	179	823
Leesburg, 7,365—Lake							
Durham Young Hospital and Clinic	Gen	Indiv	23	12	9	168	887
	Gen	Indiv	18	10	8	174	918
	Gen	Indiv	18	13	6	78	2,527
Suwannee County Hospital....	Gen	NPAssn	37	26	14	224	2,076
Marianna, 5,830—Jackson							
Jackson Hospital..............	Gen	NPAssn	63	44	18	367	2,135
Northwest Florida State Sanatorium..................	TB	State	237	209	..	...	255
Melbourne, 4,188—Brevard							
Brevard Hospital..............	Gen	NPAssn	30	8	5	90	4
Florida Rapid Treatment Center.........	Ven	State	300	156	1	2	5,0
Miami, 246,983—Dade							
Biscayne Hospital.....	Gen	Corp	41	14	16	131	9
Dade County Hospital▲.......	GenTb	County	174	129	16	760	3,7
Edgewater Hospital...........	Gen	Corp	45	25	20	616	1,8
Jackson Memorial Hosp.★+▲◇.	Gen	County	509	446	60	Estab. 2,910	18,0
Mercy Hospital.....	Gen	Church	125	...	38	Estab. 195	
Miami Hospital........	Gen	Indiv	15	6	..	...	3
Miami Medical Center.........	N&M	Indiv	35	19	..	...	4
National Children's Cardiac Home..	Card	NPAssn	62	37	..	...	
Sun-Ray Park Health Resort..	Conv	Corp	75	32	..	...	5
Variety Children's Hospital....	Chil	NPAssn	97	...	6	Estab. 19	
Victoria Hospital.............	Gen	Indiv	51	33	24	591	3,34
Miami Beach, 45,541—Dade							
Mount Sinai Hospital★▲.......	Gen	NPAssn	258	140	50	387	5,19
St. Francis Hospital+▲........	Gen	Church	175	92	30	634	4,97
Miami Springs, 5,099—Dade							
Miami-Battle Creek Sanit......	Gen	NPAssn	100	33	..	...	61
Ocala, 11,588—Marion							
Munroe Memorial Hospital....	Gen	CyCo	74	55	15	650	3,98
Opa Locka, 5,191—Dade							
North Dade Hospital.........	Gen	Corp	250	55	20	573	2,30
Orlando, 51,826—Orange							
Central Florida State Sanatorium▲⊙..............	TB	State	375	352	..	...	33
Florida Sanitarium and Hospital◇....................	Gen	Church	150	128	25	423	4,228
[illegible] ★+▲^	Gen	NPAssn	212	190	28	1,429	8,502
	ENT	Part	10	4	..	...	60
[illegible]	Gen	NPAssn	45	10	20	68	308
Palatka, 9,172—Putnam							
Mary Lawson Hospital........	Gen	Indiv	50	15	11	103	489
Panama City, 26,248—Bay							
Adams Hospital...............	Gen	Corp	20	13	8	342	1,139
Fraser Clinic Hospital........	Gen	Indiv	10	...	5	...	...
Lisenby Hospital.............	Gen	Indiv	31	17	10	430	1,378
Memorial Hospital............	Gen	County	66	22	25	271	1,376
Pensacola, 43,293—Escambia							
Escambia General Hospital. ..	Gen	County	78	51	..	...	3,133
Our Lady of Angels Hospital	Mat	Church	20	18	24	550	600
F[illegible]	Mat	NPAssn	34	20	28	1,284	1,514
S[illegible] ▲	Gen	Church	160	110	18	495	6,141
U. S. Naval Hospital★▲........	Gen	Navy	500	305	34	884	6,341
Plant City, 9,208—Hillsborough							
Meriwether Hospital..........	Gen	Indiv	14	4	5	420	865
Punta Gorda, 1,931—Charlotte							
Charlotte Hospital	Gen	NPAssn	23	10	5	42	560
Rockledge, 1,344—Brevard							
Eugene Wuesthoff Memorial Hospital................ ...	Gen	NPAssn	22	10	6	53	665
St. Augustine, 13,418—St. Johns							
East Coast Hospital▲..... ...	Gen	NPAssn	55	43	5	195	1,905
Flagler Hospital▲...	Gen	NPAssn	65	40	16	337	2,269
St. Petersburg, 95,712—Pinellas							
Mound Park Hospital▲◇......	Gen	City	163	138	25	810	6,406
St. Anthony's Hospital▲.... ..	Gen	Church	200	140	40	575	5,342
Sanford, 11,742—Seminole							
Fernald-Laughton Memorial Hospital....................	Gen	NPAssn	58	27	11	560	2,888
Sarasota, 18,705—Sarasota							
Joseph Halton Hospital..... ..	Gen	Indiv	8	4	2	10	300
Sarasota Municipal Hospital...	Gen	City	58	55	14	467	2,550
Se[illegible]							
	Gen	Indiv	20	8	6	47	417
	Gen	Indiv	24	12	6	126	...
Starke, 2,901—Bradford							
North Florida Clinic Hosp.....	Gen	Corp	50	16	10	195	926

Key to symbols and abbreviations is on page 124

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Stuart, 2,892—Martin							
Martin County Hospital	Gen	NPAssn	29	10	8	130	601
Tallahassee, 27,158—Leon							
Federal Correctional	Inst	USPHS	25	8	..	...	237
	Gen	Church	37	17	10	39	974
▲	Gen	City	150	42	32	601	2,914
T							
▲	Gen	City	66	50	8	285	2,378
	Gen	County	125	90	12	448	3,008
▲	Gen	Church	111	104	30	1,461	6,486
	TB	State	500	483			518
▲	Gen	City	300	234	44	1,422	11,085
▲	Gen	USAF	301	88	27	356	2,648
Tarpon Springs Municipal Hospital	Gen	NPAssn	15	7	6	70	294
	Gen	USAF	75	16	..	...	843
Umatilla, 1,288—Lake							
Harry-Anna Crippled Children's Home	Orth	NPAssn	100	65	..	...	64
Valparaiso, 1,041—Okaloosa							
Bay Hospital	Gen	Corp	13	2	6	134	951
Vero Beach, 4,750—Indian River							
Indian River Memorial Hosp.	Gen	NPAssn	35	13	12	191	1,027
Wauchula, 2,857—Hardee							
Palmetto Medical Clinic-Hospital	Gen	Part	25	14	5	93	1,118
Wauchula Infirmary	Gen	Indiv	25	16	5	53	854
West Palm Beach, 43,053—Palm Beach							
Good Samaritan Hospital▲◇	Gen	NPAssn	133	77	18	491	4,043
St. Mary's Hospital▲	Gen	Church	150	76	25	482	3,429
Winter Haven, 8,263—Polk							
Winter Haven Hospital	Gen	NPAssn	65	37	18	474	2,889

Related Institutions

l	Gen	County	28	12	6	171	658
Villa Rose	ChilNeur	Indiv	30	30	..	...	29
Fort Lauderdale, 36,000—Broward							
Provident Hospital	Gen	NPAssn	36		6	...	...
Gainesville, 26,577—Alachua							
Florida Farm Colony	MeDe	State	575	513	..	...	84
McIntosh, 397—Marion							
Strange's Hospital	Gen	Indiv	17	1	6	50	385
Miami Beach, 45,541—Dade							
Sunshine Halls	Conv	Indiv	30	...	..	...	...
	Gen	NPAssn	28	16	..	...	389
Earle Restorium	Conv	Indiv	38	18	..	...	105
Florence Crittenton Home	Mat	NPAssn	18	17	12	51	58
		State	56	33	8	94	1,051
	M	Indiv	40	10	..	...	152
		Indiv	9	5	9	108	312

GEORGIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Adel, 2,773—Cook							
	Gen	CyCo	28	...	8	Estab. 1950	
▲	Gen	CyCo	127	56	28	948	4,431
Alto, 217—Habersham							
Alto Medical Center▲○	Ven	State	889	628	5	12	30,825
Americus, 11,367—Sumter							
Americus and Sumter County Hospital	Gen	NPAssn	40	34	10	316	1,752
Athens, 28,102—Clarke							
Athens General Hospital▲	Gen	County	84	53	14	355	2,628
St. Mary's Hospital★▲	Gen	Church	102	75	16	804	4,316
Atlanta, 327,090—Fulton							
Albert Steiner Clinic For Cancer and Allied Diseases+	Unit of Grady Memorial Hospital						
Blackman-Walton Sanatorium	Gen	Indiv	25	15	..	...	1,156
Contagious Disease Hospital	Unit of Grady Memorial Hospital						
Crawford W. Long Memorial Hospital★+▲◇	Gen	NPAssn	471	361	90	5,341	22,218
Georgia Baptist Hosp.★+▲◇	Gen	Church	209	163	20	736	7,038
Grady Memorial Hospital★+▲◇	Gen	Counties	610	503	90	5,359	23,333
Henrietta Egleston Hospital for Children+▲	ChilOrth	NPAssn	40	34	4	...	1,257
Jesse Parker Williams Hosp.	Gen	NPAssn	66	40	..	...	1,910
Joseph B. Whitehead Memorial Hospital	Inst	State	30	4	..	...	536
Peachtree Sanitarium	N&M	Indiv	65	35	..	...	1,080
Piedmont Hospital★+▲◇	Gen	NAPssn	132	129	18	1,326	6,025
Ponce de Leon Ear, Nose, and Throat Infirmary▲	ENT	Indiv	26	21	..	...	2,827
St. Joseph's Infirmary★+▲◇	Gen	Church	150	127	28	1,222	6,909
U. S. Army Hospital▲	Gen	Army	100	56	12	375	2,898
U. S. Penitentiary Hospital▲	Inst	USPHS	117	50	..	...	1,158

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Veterans Admin. Hospital▲	TB	Vet	225	215	..	...	476
William A. Harris Memorial Hospital	Gen	Corp	50	40	4	101	950
Augusta, 71,507—Richmond							
University Hospital★+▲◇	GenTb	City	456	364	40	2,377	13,431
Veterans Admin. Hospital+▲	Ment	Vet	1,300	1,268	..	..	1,610
Wilhenford Hospital	Unit of University Hospital						
Bainbridge, 7,568—Decatur							
Bainbridge Hospital	Gen	Part	32	9	7	237	866
Riverside Hospital	Gen	Part	32	14	6	140	839
Blakely, 3,235—Early							
Wall Hospital	Gen	Indiv	20	4	6	50	370
Blue Ridge, 1,712—Fannin							
Brooks Hospital	Gen	Indiv	10	3	3	88	448
Bowdon, 1,144—Carroll							
Jubal Watts Memorial Hosp.	Gen	Indiv	26	21	6	135	1,806
Brunswick, 18,086—Glynn							
City Hospital	Gen	CyCo	75	40	15	506	2,700
Buford, 3,812—Gwinnett							
Hutchins Memorial Hospital	Gen	Corp	23	4	8	269	673
Butler, 1,173—Taylor							
Montgomery Hospital	Gen	Indiv	23	10	4	74	604
Calhoun, 3,217—Gordon							
Johnston-Hall Hospital	Gen	Indiv	25	8	6	313	1,083
Camp Gordon,—Richmond							
U. S. Army Hospital	Gen	Army	175	...	Reopened 1950		
Camp Stewart,—Liberty							
U. S. Army Hospital	Gen	Army	100	...	Reopened 1950		
Canton, 2,704—Cherokee							
Coker's Hospital	Gen	Corp	50	26	6	236	2,105
Carrollton, 7,767—Carroll							
Tanner Memorial Hospital	Gen	CyCo	45	18	15	434	1,804
Cartersville, 7,282—Bartow							
Howell-Quillian Clinic-Hosp.	Gen	Part	24	8	10	451	1,039
Wofford-Stanford Hospital	Gen	Part	12	2	3	98	259
Cedartown, 9,469—Polk							
Polk General Hospital	Gen	NPAssn	30	18	12	472	2,042
▲	Gen	Vet	631	577	..	...	7,510
Columbus, 79,510—Muscogee							
Columbus City Hospital★▲◇	Gen	City	260	173	40	1,894	10,226
Cumming, 1,263—Forsyth							
Mary Alice Hospital	Gen	Part	31	11	8	250	1,103
Cuthbert, 4,033—Randolph							
Patterson Hospital▲	Gen	Part	50	29	10	137	1,289
Dalton, 15,962—Whitfield							
Hamilton Memorial Hospital	Gen	NPAssn	45	37	12	987	3,000
Decatur, 21,626—De Kalb							
Scottish Rite Hospital for Crippled Children+▲	Orth	NPAssn	60	56	.	..	362
Donalsonville, 2,562—Seminole							
Donalsonville Hospital▲	Gen	Part	30	18	6	214	1,671
Douglas, 7,437—Coffee							
Douglas Hospital	Gen	City	32	15	12	512	2,570
Dublin, 10,213—Laurens							
Claxton Sanitarium	Gen	Indiv	65	45	12	371	2,975
Veterans Admin. Hospital	Gen	Vet	338	299	..	...	3,414
Duluth, 626—Gwinnett							
Joan Glancy Memorial Hosp	Gen	NPAssn	14	4	14	345	539
Eastman, 3,595—Dodge							
Eastman Hospital▲	Gen	Part	21	9	4	73	799
Elberton, 6,753—Elbert							
Elberton-Elbert County Hospital	Gen	CyCo	48	10	12	150	799
Thompson-Johnson Hospital	Gen	Part	13	9	4	109	1,013
Emory University, 250—De Kalb							
Emory University Hosp.★+▲◇	Gen	NPAssn	283	247	36	1,731	10,541
al.	Gen	County	42	25	9	286	1,318
McCoy-Jackson Hospital	Gen	Part	11	4	4	131	470
Fort Benning,—Chattahoochee							
U. S. Army Hospital▲	Gen	Army	450	208	40	1,272	10,074
Franklin, 390—Heard							
Heard County Memorial Hosp.	Gen	County	22	8	9	78	700
Gainesville, 11,881—Hall							
Downey Hospital▲	Gen	Corp	52	31	14	732	2,238
Greensboro, 2,683—Greene							
Minnie G. Boswell Memorial Hospital	Gen	County	28	11	12	105	783
Griffin, 13,952—Spalding							
R. F. Strickland and Son Memorial Hospital▲	Gen	CyCo	47	40	11	708	2,988
Hahira, 1,012—Lowndes							
Smith Hospital	Gen	Corp	34	21	8	215	1,843
Hawkinsville, 3,335—Pulaski							
R. J. Taylor Memorial Hosp.	Gen	NPAssn	36	22	7	194	1,596
Jasper, 1,373—Pickens							
Roper Hospital	Gen	Indiv	40	25	8	198	1,779
Jesup, 4,627—Wayne							
Ritch-Leaphart Hospital	Gen	Part	56	25	17	420	1,656
LaFayette, 4,858—Walker							
Dr. Kitchens Clinic-Hospital	Gen	Part	8	1	4	136	454
▲	Gen	CyCo	140	82	19	794	4,632
	Gen	Indiv	36	20	12	296	1,476
Lyons, [illegible]—Toombs							
Aiken Hospital	Gen	Indiv	16	6	6	133	587
Macon, 70,106—Bibb							
Macon Hospital★▲○	Gen	CyCo	248	230	54	2,439	14,560
▲	Gen	Corp	60	44	10	172	2,813
	Gen	NPAssn	105	...	24	Estab. 1950	

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Metter, 2,082—Candler							
Kennedy Memorial Hospital...	Gen	Indiv	24	...	6	...	...
Milledgeville, 8,850—Baldwin							
Allen's Invalid Home.	N&M	Part	131	98	..	...	462
Milledgeville State Hospital⊙ .	Ment	State	9,630	10,060	9	37	2,623
Richard Binion Clinic Hosp....	Gen	Part	51	22	7	202	1,932
Scott Hospital	Gen	Indiv	25	11	6	75	717
Millen, 3,443—Jenkins							
Mulkey Hospital..............	Gen	Part	35	15	10	222	1,092
Monroe, 4,540—Walton							
Walton County Hospital.... ..	Gen	County	36	15	12	456	1,457
Montezuma, 2,923—Macon							
Macon County Clinic-Hosp. .	Gen	Part	45	15	5	55	674
Riverside Sanatorium	Gen	Indiv	35	23	8	95	880
Moultrie, 11,612—Colquitt							
Vereen Memorial Hospital. .	Gen	NPAssn	58	30	14	527	3,207
Reidsville, 1,266—Tattnall							
Jelks Hospital.	Gen	Indiv	14	7	2	126	416
Reynolds, 871—Taylor							
Dr. F. H. Sams Hospital.... .	Gen	Indiv	12	8	5	103	615
Richland, 1,565—Stewart							
Stewart-Webster Hospital	Gen	Counties	25	...	8	Estab. 1950	
Rome, 29,617—Floyd							
Battey State Hospital▲.... ..	TB	State	1,550	1,410	..	..	1,012
Floyd Hospital▲	Gen	County	130	77	30	824	5,800
McCall Hospital▲.	Gen	Corp	63	40	24	681	3,349
Royston, 1,818—Franklin							
Cobb Memorial Hospital ...	Gen	NPAssn	26	...	5	Estab. 1950	
Sandersville, 4,475—Washington							
Rawlings Sanitarium▲. .	Gen	NPAssn	60	32	14	209	1,522
Savannah, 119,689—Chatham							
Central of Georgia Railway Hospital▲...	Indus	NPAssn	65	52	.	..	2,451
Charity Hospital	Gen	NPAssn	100	38	19	374	2,360
Georgia Infirmary	Gen	NPAssn	95	44	12	487	2,549
Oglethorpe Sanatorium........	Gen	Corp	50	35		.	1,928
St. Joseph's Hospital▲◇.	Gen	Church	124	92	26	744	4,135
Telfair Hospital	Gen	NPAssn	79	69	37	1,003	3,372
U. S. Marine Hospital▲ . .	Gen	USPHS	180	116	..	.	1,781
Warren A. Candler Hospital▲◇.	Gen	Church	119	77	23	604	4,911
Smyrna, 1,997—Cobb							
Brawner's Sanitarium...... ..	N&M	Indiv	45	32	..	...	1,096
Statesboro, 6,089—Bulloch							
Bulloch County Hospital......	Gen	County	70	44	12	455	3,262
Sylvester, 2,626—Worth							
Worth County Hospital.......	Gen	CyCo	29	...	9	Estab. 1950	
Thomasville, 14,446—Thomas							
John D. Archbold Memorial Hospital▲	Gen	NPAssn	100	87	15	391	4,579
Tifton, 1,817—Tift							
Tift County Hospital...	Gen	County	44	25	14	584	1,830
Toccoa, 6,788—Stephens							
Stephens County Hospital.....	Gen	County	43	35	9	507	2,554
Trion, 3,018—Chattooga							
Riegel Community Hospital...	Gen	NPAssn	27	24	6	386	2,033
Valdosta, 20,004—Lowndes							
Little-Griffin Hospital........	Gen	NPAssn	80	44	18	615	3,410
Vidalia, 5,827—Toombs							
Conner-Bedingfield Hospital...	Gen	Corp	13	7	5	202	679
Gross-Mercer Hospital.........	Gen	Corp	23	8	6	100	600
Vienna, 2,203—Dooly							
Dooly Hospital..	Gen	Corp	21	7	5	74	694
Warm Springs, 608—Meriwether							
Georgia Warm Springs Foundation+▲.	Orth	NPAssn	165	167	..	...	817
Washington, 3,795—Wilkes							
Washington General Hospital .	Gen	City	60	31	10	351	2,167
Waycross, 18,842—Ware							
Ware County Hospital	Gen	County	85	61	15	765	4,694
West Point, 4,063—Troup							
Valley Hospital...	Gen	City	32	17	5	357	2,657

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Athens, 28,102—Clarke							
Gilbert Memorial Infirmary....	Inst	State	41	2	..	...	739
Atlanta, 327,090—Fulton							
Aidmore Children's Convalescent Hospital	Orth	NPAssn	60	51	..	...	427
Our Lady of Perpetual Help Free Cancer Home...........	Cancer	Church	80	72	..	...	333
Barwick, 409—Brooks							
Barwick Hospital.	Gen	Indiv	6	3	3	65	178
Chamblee, 3,459—De Kalb							
Chamblee Hospital...........	Gen	Indiv	9	4	6	255	536
Clayton, 1,299—Rabun							
Rabun County Maternity Hospital.......	Mat	County	12	4	12	258	259
Columbus, 79,510—Muscogee							
Muscogee County Tuberculosis Hospital.....	TB	County	45	40	..	...	42
Cornelia, 2,428—Habersham							
Arrendale Hospital. '..........	Gen	Indiv	12	9	6	104	391
Gracewood, 500—Richmond							
Georgia Training School for Mental Defectives...........	MeDe	State	750	658	..	...	139
Homerville, 1,800—Clinch							
Huey Hospital...............	Gen	Indiv	13	6	2	29	452

IDAHO

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
American Falls, 1,890—Power							
Schiltz Memorial Hospital.....	Gen	County	21	7	8	149	596
Blackfoot, 5,178—Bingham							
Bingham Memorial Hospital...	Gen	NPAssn	50	...	16	Estab. 1950	
State Hospital South⊙.........	Ment	State	750	660	..	...	523
Boise, 34,152—Ada							
St. Alphonsus Hospital▲◇.....	Gen	Church	160	120	30	1,042	5,730
St. Luke's Hospital▲◇.	Gen	Church	135	99	28	888	5,178
Veterans Admin. Hospital▲....	Gen	Vet	263	217	..	...	1,995
Bonners Ferry, 1,758—Boundary							
[illegible]	Gen	County	22	21	9	152	1,890
[illegible]	Gen	Corp	29	16	8	340	1,207
[illegible]	Gen	NPAssn	75	...	18	Estab. 1950	
Cascade, 1,029—Valley							
Valley County Hospital	Gen	County	16	6	6	73	290
Coeur d'Alene, 12,189—Kootenai							
Lake City General Hospital...	Gen	Indiv	35	25	14	344	1,692
Cottonwood, 673—Idaho							
Our Lady of Consolation Hospital.....................	Gen	Church	35	21	10	171	810
Council, 692—Adams							
[illegible]	Gen	NPAssn	25	14	20	132	961
[illegible]							
[illegible]	Gen	NPAssn	34	11	12	270	913
[illegible] Hospital⊙........	TB	State	70	69	..	...	69
[illegible]							
[illegible]	Gen	City	24	10	5	30	667
[illegible]	Gen	Indiv	20	11	6	75	577
[illegible]	Gen	Church	121	91	32	800	4,958
[illegible]▲	Gen	Church	75	48	32	423	2,783
[illegible]	Gen	Part	45	30	9	320	2,525
Lewiston, 12,910—Nez Perce							
St. Joseph's Hospital▲◇........	Gen	Church	120	84	22	753	4,177
Malad City, 2,712—Oneida							
Oneida Hospital.	Gen	NPAssn	17	5	7	102	498
Montpelier, 2,684—Bear Lake							
Bear Lake Memorial Hospital..	Gen	County	35	...	10	Estab. 1950	
Moscow, 10,548—Latah							
Gritman Memorial Hospital...	Gen	NPAssn	58	35	22	648	1,986
Nampa, 16,142—Canyon							
Mercy Hospital▲◇............	Gen	Church	94	60	23	749	3,318
Samaritan Hospital▲◇.........	Gen	Church	50	39	6	260	2,050
Orofino, 1,653—Clearwater							
Orofino Hospital..............	Gen	Part	25	14	6	106	574
State Hospital North..........	Ment	State	475	448	..	...	87
Pocatello, 25,882—Bannock							
Pocatello General Hospital▲◇..	Gen	County	76	47	22	393	2,152
St. Anthony's Mercy Hosp.▲◇.	Gen	Church	100	62	25	1,078	4,335
Preston, 3,884—Franklin							
General Memorial Hospital....	Gen	NPAssn	17	9	8	249	447
Rupert, 3,090—Minidoka							
Rupert General Hospital......	Gen	Indiv	11	5	4	59	332
St. Anthony, 2,687—Fremont							
St. Anthony General Hospital.	Gen	City	16	7	8	178	620
St. Maries, 2,211—Benewah							
St. Maries Hospital...........	Gen	Part	28	14	4	82	768
Salmon, 2,643—Lemhi							
[illegible]	Gen	County	30	...	8	Estab. 1950	
[illegible]	Gen	County	33	12	11	165	898
Stibnite, 120—Valley							
Stibnite Hospital	Gen	NPAssn	15	2	4	22	185
Sun Valley, 300—Blaine							
Sun Valley Hospital	Gen	Indiv	12	4	2	49	392
Twin Falls, 17,544—Twin Falls							
Twin Falls Clinic Hospital.....	Gen	Part	8	...	..	Estab. 1950	
Twin Falls County General Hospital....	Gen	County	82	56	28	1,271	3,890
Wallace, 3,133—Shoshone							
Providence Hospital▲.........	Gen	Church	57	42	12	175	2,101
Wallace Hospital.............	Gen	Part	40	18	6	...	1,046
[illegible]							
[illegible]	Gen	CyCo	30	...	10	Estab. 1950	
[illegible]	Gen	Church	30	13	12	409	1,137

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Boise, 34,152—Ada							
Booth Memorial Hospital......	Mat	Church	8	9	12	50	57
Idaho State Elks' Convalescent Home for Children..........	Orth	NPAssn	84	69	..	...	317
Moscow, 10,548—Latah							
University of Idaho Infirmary.	Inst	State	30	7	..	...	814
Nampa, 16,142—Canyon							
[illegible]	MeDe	State	710	700	..	...	136
F [illegible]	Gen	Indiv	10	2	..	...	25

ILLINOIS

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Aledo, 2,909—Mercer							
Mercer County Hospital.......	Gen	County	57	25	16	200	1,120
Alton, 32,176—Madison							
Alton Memorial Hospital▲◇....	Gen	Church	130	103	32	808	4,586
Alton State Hospital+.........	Ment	State	1,839	1,785	..	...	735

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
St. Anthony's Infirmary and Sanitarium	Gen	Church	80	70	..	...	625
St. Joseph's Hospital+▲◇	Gen	Church	165	109	40	816	5,428
Amboy, 2,125—Lee							
Amboy Public Hospital	Gen	NPAssn	12	4	6	118	312
Anna, 4,386—Union							
Anna State Hospital+	Ment	State	2,453	2,313	..	...	695
[illegible]	Gen	City	16	8	6	386	717
[illegible]	Gen	NPAssn	200	115	30	776	4,875
[illegible]	TB	County	75	58	..	...	103
[illegible]	N&M	Church	172	166	..	...	458
[illegible]	Gen	Church	125	82	28	769	3,934
[illegible]	Gen	Church	110	78	26	939	3,650
Avon, 803—Fulton							
Saunders Hospital	Gen	NPAssn	15	12	7	152	316
Batavia, 5,862—Kane							
Fox River Sanitarium	TB	NPAssn	65	40	..	...	65
Beardstown, 6,069—Cass							
Schmitt Memorial Hospital	Gen	City	36	29	8	331	1,845
Belleville, 32,701—St. Clair							
St. Elizabeth's Hospital	Gen	Church	121	142	32	1,330	6,024
U. S. Air Force Hospital▲	Gen	USAF	200	151	12	454	4,574
[illegible]	Gen	NPAssn	37	27	5	153	1,385
[illegible]	Gen	Church	75	30	18	335	2,113
Moore Hospital	Gen	Indiv	25	12	2	1	357
Berwyn, 51,176—Cook							
MacNeal Memorial Hosp.★+▲	Gen	NPAssn	165	147	45	1,928	8,572
Bloomington, 34,048—McLean							
Mennonite Hospital◇	Gen	Church	112	101	25	1,032	4,512
St. Joseph's Hospital◇	Gen	Church	200	140	25	528	5,591
Blue Island, 17,580—Cook							
St. Francis Hospital▲	Gen	Church	145	95	28	942	4,456
Breese, 2,176—Clinton							
St. Joseph Hospital	Gen	Church	44	28	12	398	1,290
[illegible]	TB	County	40	28	..	...	44
[illegible]	TB	County	54	48	..	...	60
[illegible]	Gen	Church	95	62	12	581	3,466
Canton, 11,910—Fulton							
Graham Hospital▲◇	Gen	NPAssn	112	91	35	824	4,538
[illegible]	Gen	Church	60	41	15	567	2,351
[illegible]	Gen	Indiv	26	16	6	218	810
[illegible]	Gen	NPAssn	40	23	12	446	1,399
St. Mary's Hospital▲	Gen	Church	86	50	15	692	2,845
[illegible]	Gen	City	125	108	25	982	6,442
[illegible]	See Urbana						
[illegible] paign							
U. S. Air Force Hospital▲	Gen	USAF	175	107	17	327	2,978
Charleston, 9,146—Coles							
M. A. Montgomery Memorial Sanitarium	Gen	NPAssn	30	20	10	317	1,047
Chester, 5,388—Randolph							
Chester Hospital	Gen	NPAssn	23	17	12	160	636
Chicago, 3,606,436—Cook							
Albert Merritt Billings Hosp.	Unit of University of Chicago Clinics						
Alexian Brothers Hosp.★+▲◇	Gen	Church	251	188	..	...	5,221
American Hospital★+▲	Gen	NPAssn	162	111	25	580	5,736
[illegible]	Gen	Church	275	257	30	1,060	8,476
[illegible]	Gen	NPAssn	110	82	27	837	4,368
[illegible]	Gen	Church	101	53	..	...	1,658
[illegible]	Gen	Church	82	57	21	691	2,926
[illegible]	Unit of University of Chicago Clinics						
Burrows Hospital	Gen	Indiv	40	11	6	55	456
Chicago Clinic of Physical Medicine	PhysMed	NPAssn	60	31	..	...	92
[illegible]	[illegible]	Corp	54	20	..	...	1,431
[illegible]		NPAssn	70	47	..	...	197
[illegible] Center	Unit of Municipal Contagious Disease Hospital						
Chicago Lying-In Hosp.+▲⊙	Unit of University of Chicago Clinics						
[illegible]	Gen	NPAssn	92	85	20	311	2,224
[illegible]	Gen	Corp	52	26	..	...	1,420
[illegible]	Ment	State	5,003	5,020	..	...	1,031
[illegible]	Chil	NPAssn	233	121	..	...	4,601
[illegible]	TB	City	1,303	1,251	1	48	1,055
[illegible]	Gen	Church	160	92	20	597	4,223
[illegible]	Unit of Cook County Hospital						
Cook County Hospital★+▲◇	Gen	County	3,200	2,829	225	7,394	72,813
Cook County Psychopathic Hospital⊙	Unit of Cook County Hospital						
Edgewater Hospital★+▲	Gen	NPAssn	144	132	24	1,251	7,749
Englewood Hospital★+▲◇	Gen	NPAssn	160	127	32	1,043	6,234
Evangelical Hospital★▲◇	Gen	Church	195	166	45	2,311	8,075
[illegible]	N&M	Corp	50	41	..	...	768
[illegible]	MatGyn	Church	75	42	50	1,847	2,884
Community Hospital+▲	Gen	NPAssn	72	68	..	...	3,132

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Garfield Park Community Hospital★▲◇	Gen	NPAssn	150	109	32	1,428	6,023
Grant Hospital★+▲◇	Gen	NPAssn	236	184	45	1,156	7,373
Henrotin Hospital★+▲◇	Gen	NPAssn	100	88	25	617	3,427
Holy Cross Hospital★▲	Gen	Church	142	104	36	1,708	6,442
Home for Destitute Crippled Children	Unit of University of Chicago Clinics						
Hospital of St. Anthony de Padua★+▲◇	Gen	Church	217	161	38	1,548	7,804
Ida May Scott Hospital	Gen	NPAssn	13	7	..	...	170
Illinois Central Hospital★+▲	Gen	NPAssn	265	203	40	998	6,194
Illinois Eye and Ear Infirmary+▲	ENT	State	134	87	..	...	3,797
Illinois Masonic Hosp.★+▲◇	Gen	NPAssn	225	191	40	1,237	8,369
Illinois Neuropsychiatric Institute+▲⊙	Ment	State	82	60	..	...	770
Illinois Surgical Institute for Children	Unit of Research and Educational Hospitals						
Jackson Park Hospital★▲	Gen	Corp	146	108	20	692	5,037
Kenner Hospital	Gen	NPAssn	65	24	..	...	1,478
La Rabida Jackson Park Sanitarium▲	Card	NPAssn	85	68	..	...	205
Lewis Memorial Maternity Hospital+▲	MatGyn	Church	150	92	100	1,641	2,832
Loretto Hospital★+▲	Gen	Church	139	114	31	1,219	5,159
Lutheran Deaconess Home and Hospital★+▲◇	Gen	Church	193	154	42	1,250	7,258
Manor Hospital	Gen	NPAssn	47	34	..	...	1,870
Martha Washington Hospital▲	Gen	NPAssn	99	53	..	...	3,284
Mercy Hospital★+▲◇	Gen	Church	359	299	47	934	9,420
Michael Reese Hospital★+▲◇	Gen	NPAssn	647	470	71	2,285	17,123
Mother Cabrini Memorial Hospital★◇	Gen	Church	130	112	30	1,108	6,365
Mount Sinai Hospital★+▲◇	Gen	NPAssn	285	275	49	1,774	10,177
[illegible]	IsoVen	City	260	68	..	...	2,256
[illegible] Hospital	Unit of University of Chicago Clinics						
Norwegian-American Hospital★+▲◇	Gen	NPAssn	175	135	50	1,452	6,204
Passavant Memorial Hospital★+▲◇	Gen	NPAssn	260	226	37	1,020	7,706
Pinel Sanitarium	N&M	NPAssn	50	38	..	...	375
Presbyterian Hospital★+▲◇	Gen	NPAssn	450	357	54	2,031	12,856
Provident Hospital★+▲◇	Gen	NPAssn	180	144	28	1,734	5,683
Ravenswood Hospital★+▲◇	Gen	NPAssn	207	164	52	1,524	9,236
Research and Educational Hospitals★+▲⊙	Gen	State	422	357	24	1,258	7,414
Roosevelt Memorial Hospital▲	Gen	NPAssn	45	23	..	...	1,302
Roseland Community Hospital★▲◇	Gen	NPAssn	101	84	24	874	3,720
St. Anne's Hospital★+▲◇	Gen	Church	320	277	80	3,250	11,122
[illegible]	See Hospital of St. Anthony de Padua						
[illegible]	Gen	Church	189	139	42	1,187	6,399
[illegible]	Gen	Church	331	265	77	2,529	10,081
St. George Hospital▲	Gen	Church	100	75	..	...	3,068
St. Joseph Hospital★+▲◇	Gen	Church	195	170	30	1,504	6,318
St. Luke's Hospital★+▲◇	Gen	NPAssn	564	467	55	1,439	15,895
St. Mary of Nazareth Hospital★+▲◇	Gen	Church	263	232	60	2,200	9,410
St. Vincent's Infant and Maternity Hospital+▲	MatChil	Church	235	176	18	467	1,078
Sarah Morris Hospital for Children	Unit of Michael Reese Hospital						
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	53	..	...	171
South Chicago Community Hospital★▲◇	Gen	NPAssn	234	169	40	1,509	8,826
South Shore Hospital▲	Gen	Corp	125	92	20	855	5,029
[illegible]	Gen	NPAssn	88	60	11	520	3,328
[illegible]	Gen	Church	193	163	65	1,750	6,484
[illegible]	Gen	USPHS	204	177	..	...	2,300
University Hospital★▲	Gen	Church	133	76	..	...	3,965
University of Chicago Clinics★+▲	Gen	NPAssn	550	435	134	3,819	13,213
Veterans Rehabilitation Center+	Ment	State	24	17	..	...	132
Walther Memorial Hosp.★▲◇	Gen	Church	175	131	34	1,165	6,525
Wesley Memorial Hosp.★+▲◇	Gen	Church	571	490	45	1,445	15,768
Women and Children's Hospital★+▲	Gen	NPAssn	115	72	30	909	4,309
Woodlawn Hospital★+▲	Gen	NPAssn	125	97	22	496	3,957
Chicago Heights, 24,369—Cook							
[illegible]	Gen	Church	151	87	24	1,122	5,259
[illegible]	Gen	NPAssn	42	30	11	565	1,725
[illegible]	Gen	City	45	33	6	244	1,501
Colchester, 1,570—McDonough							
Colchester Hospital	Gen	Indiv	13	...	1	Estab. 1950	
Danville, 37,892—Vermilion							
Lake View Hospital▲◇	Gen	NPAssn	155	128	25	1,046	5,962
St. Elizabeth Hospital▲◇	Gen	Church	183	120	35	1,083	6,424
Vermilion County Tuberculosis Dispensary and Hospital▲	TB	County	60	45	..	...	33
Veterans Admin. Hospital▲	Ment	Vet	2,025	1,750	..	...	1,008
Decatur, 67,801—Macon							
Decatur and Macon County Hospital▲◇	Gen	NPAssn	244	217	40	1,388	9,313
Macon County Tuberculosis Sanatorium▲⊙	TB	County	80	78	..	...	144
St. Mary's Hospital	Gen	Church	244	199	40	1,327	8,250
Wabash Employes' Hospital▲	Indus	NPAssn	75	47	..	...	1,375

Key to symbols and abbreviations is on page 124

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
De Kalb, 11,567—De Kalb							
De Kalb County Tuberculosis Sanatorium	TB	County	25	14	..	..	19
De Kalb Public Hospital▲	Gen	City	39	29	10	310	1,437
St. Mary's Hospital▲	Gen	Church	50	40	13	258	1,280
Des Plaines, 14,975—Cook							
Forest Sanitarium	N&M	Indiv	45	25	..		285
Dixon, 11,532—Lee							
Dixon Public Hospital▲◇	Gen	NPAssn	87	57	22	598	2,867
Dixon State Hospital+	MeDe	State	5,105	4,715	5	3	456
Downey,—Lake							
Veterans Admin. Hospital+▲⊙	Ment	Vet	2,977	2,427	..	...	1,194
Dunning,—Cook							
Chicago State Hospital	See Chicago						
Du Quoin, 7,139—Perry							
[illegible]	Gen	NPAssn	75	51	13	417	2,141
I[illegible]							
[illegible]▲	Gen	Vet	228	211	.	.	2,495
I[illegible]							
[illegible]	Ment	State	2,397	2,242	.	.	784
East St. Louis, 81,950—St. Clair							
Christian Welfare Hospital▲◇	Gen	NPAssn	155	148	78	1,320	5,186
Pleasant View Sanatorium▲	TB	County	100	82		.	89
St. Mary's Hospital★▲	Gen	Church	290	237	36	1,139	7,128
Edwardsville, 8,800—Madison							
Madison County Tuberculosis Sanatorium▲	TB	*County*	*100*	*86*	..	...	*147*
[illegible]							
[illegible] Hospital	Gen	Church	16	13	..	...	960
Eldorado, 4,500—Saline							
Ferrell Hospital	Gen	Part	48	31	12	363	1,460
Elgin, 43,534—Kane							
[illegible]▲	Ment	State	6,108	6,141	.	...	2,600
[illegible]	N&M	Indiv	85	74		...	121
[illegible]▲	Gen	Church	150	113	30	991	5,302
Sherman Hospital▲◇	Gen	NPAssn	125	126	30	817	5,545
Elmhurst, 21,204—Du Page							
Memorial Hospital of Du Page County★▲	Gen	NPAssn	185	172	35	1,556	7,762
Evanston, 73,030—Cook							
Community Hospital	Gen	NPAssn	28	20	7	87	906
Evanston Hospital★+▲◇	Gen	NPAssn	337	225	50	1,585	8,551
St. Francis Hospital★+▲◇	Gen	Church	366	309	74	2,380	12,410
Evergreen Park, 10,515—Cook							
Little Company of Mary Hospital★+▲◇	Gen	Church	350	272	61	3,465	14,758
Fairbury, 2,430—Livingston							
Fairbury Hospital	Gen	NPAssn	32	23	12	293	1,414
Fairfield, 5,575—Wayne							
Fairfield Memorial Hospital	Gen	NPAssn	85	...	16	Estab. 1950	
Flora, 5,250—Clay							
Clay County Hospital	Gen	County	56	...	16	Estab. 1950	
Freeport, 22,425—Stephenson							
Deaconess Hospital▲◇	Gen	NPAssn	85	68	25	606	2,679
St. Francis Hospital▲◇	Gen	Church	135	96	20	613	3,630
Galesburg, 31,357—Knox							
Galesburg Cottage Hosp.▲◇	Gen	NPAssn	135	119	25	739	4,541
St. Mary's Hospital	Gen	Church	100	71	20	489	2,738
Geneseo, 4,318—Henry							
J. C. Hammond City Hosp.▲	Gen	City	25	15	8	264	1,087
Geneva, 5,032—Kane							
Community Hospital▲	Gen	NPAssn	73	53	20	457	2,308
Granite City, 29,139—Madison							
St. Elizabeth Hospital▲◇	Gen	Church	122	86	25	1,081	4,383
Great Lakes,—Lake							
U. S. Naval Hospital★+▲	Gen	Navy	1,237	650	33	1,152	8,674
Harrisburg, 10,994—Saline							
Harrisburg Hospital	Gen	Corp	40	18	10	247	1,245
Harvard, 3,462—McHenry							
Harvard Community Hospital	Gen	*NPAssn*	*24*	14	10	*200*	636
Harvey, 20,636—Cook							
Ingalls Memorial Hospital▲	Gen	NPAssn	115	72	30	1,109	4,552
Hazel Crest, 2,119—Cook							
Hazel Crest General Hospital	Gen	Corp	31	12	.	.	976
Herrin, 9,401—Williamson							
Herrin Hospital	Gen	*NPAssn*	*85*	*70*	20	566	2,705
Highland, 4,237—Madison							
St. Joseph's Hospital	Gen	Church	140	78	30	582	3,186
[illegible]							
[illegible]▲	Gen	NPAssn	51	37	20	402	2,279
[illegible]							
Hillsboro Hospital	Gen	*NPAssn*	65	42	*12*	352	1,743
Hines,—Cook							
Veterans Admin. Hosp.+▲○	GenMent	Vet	3,109	2,574	..	..	34,210
Hinsdale, 8,664—Du Page							
Hinsdale Sanitarium and Hospital▲◇	Gen	Church	129	113	15	538	3,810
Jacksonville, 20,374—Morgan							
[illegible]	Ment	State	3,665	3,240	..	..	1,074
[illegible]▲	N&M	Corp	100	82	..	...	162
[illegible]							
[illegible]	TB	County	40	38	.	...	62
[illegible]▲	Gen	Church	90	79	15	477	2,968
[illegible]	Gen	Church	76	73	12	414	2,650
Joliet, 52,460—Will							
Illinois State Penitentiary Hospital	Inst	State	153	63	..	...	2,190
St. Joseph's Hospital★◇	Gen	Church	303	260	44	1,886	9,509
[illegible]	Gen	NPAssn	175	103	30	822	5,585
[illegible]							
[illegible]	TB	County	*98*	73	..	...	*92*
Kankakee, 25,873—Kankakee							
Kankakee State Hospital+▲	Ment	State	4,600	4,233	..	...	1,374
St. Mary's Hospital▲◇	Gen	Church	186	133	42	1,399	6,742

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Kewanee, 16,770—Henry							
Kewanee Public Hospital▲	Gen	NPAssn	53	40	11	320	1,592
St. Francis Hospital▲◇	Gen	Church	100	65	18	420	2,054
Lake Forest, 7,694—Lake							
Lake Forest Hospital▲	Gen	NPAssn	65	48	10	265	1,916
La Salle, 12,023—La Salle							
St. Mary's Hospital▲◇	Gen	Church	137	78	24	407	2,663
Libertyville, 5,420—Lake							
Condell Memorial Hospital	Gen	NPAssn	26	25	12	354	1,357
Magnus Rest Home	N&M	Corp	20	12	..	...	20
[illegible]	Gen	Church	74	44	16	307	1,890
[illegible]							
[illegible] Colony+	MeDe	State	5,145	4,704	2	7	350
St. Clara's Hospital	Gen	Church	66	55	9	260	2,271
Litchfield, 7,211—Montgomery							
St. Francis Hospital	Gen	Church	157	135	18	662	4,706
Mackinaw, 1,009—Tazewell							
Oak Knoll Sanatorium	TB	County	45	31	..	...	37
Macomb, 10,586—McDonough							
Phelps Hospital	Gen	NPAssn	43	24	7	261	1,213
St. Francis Hospital◇	Gen	Church	88	85	12	403	2,834
Manteno, 1,791—Kankakee							
Manteno State Hospital+▲	Ment	State	8,057	7,594	..	...	2,782
[illegible]							
[illegible]▲	*Gen*	*Vet*	*176*	*159*	..	...	*2,344*
[illegible]							
[illegible]	Gen	Church	50	54	16	712	2,445
[illegible]							
[illegible]▲	Gen	NPAssn	81	61	26	550	2,759
[illegible]							
[illegible]	Gen	Part	27	15	8	199	738
[illegible]							
[illegible]▲	Gen	Church	135	107	30	950	5,070
Moline Public Hospital★▲◇	Gen	City	198	169	48	1,328	7,533
Monmouth, 10,190—Warren							
[illegible]▲	Gen	City	76	58	18	457	1,721
[illegible]							
[illegible] Hospital	Gen	NPAssn	32	21	8	165	989
Morris, 6,917—Grundy							
Morris Hospital	Gen	NPAssn	40	19	14	325	1,032
Morrison, 3,528—Whiteside							
Morrison Community Hospital	Gen	City	18	10	12	311	752
Mount Vernon, 15,563—Jefferson							
Good Samaritan Hospital	Gen	Church	35	27	14	527	1,766
Jefferson County Memorial Hospital	Gen	NPAssn	64	33	16	329	1,744
Moweaqua, 1,470—Shelby							
Moweaqua Hospital	Gen	Indiv	30	*20*	..	...	85
[illegible]on							
[illegible]▲	*Gen*	*Church*	*33*	*24*	*10*	*421*	*1,724*
[illegible]							
[illegible]▲	TB	NPAssn	110	104	..	...	235
Normal, 9,832—McLean							
Brokaw Hospital▲◇	Gen	Church	96	67	14	238	2,687
Fairview Sanatorium	TB	County	55	29	..	...	32
North Riverside, 3,230 (Riverside P. O.)—Cook							
Municipal Tuberculosis Sanitarium	Unit of City of Chicago Municipal Tuberculosis Sanitarium						
Oak Forest, 1,851—Cook							
Cook County Infirmary▲	Chr	County	2,474	2,168	..	...	992
Cook County Tuberculosis Hospital▲	TB	County	469	416	..	...	551
Oak Park, 63,175—Cook							
Oak Park Hospital★▲◇	Gen	Church	144	121	44	1,253	5,290
[illegible]★+▲◇	Gen	NPAssn	327	292	100	3,353	12,074
[illegible]							
[illegible]	Gen	Corp	80	51	18	410	2,238
[illegible]							
[illegible]▲	Gen	Indiv	26	14	5	104	594
[illegible]							
[illegible]	TB	County	84	77	..	...	65
[illegible]▲	Gen	City	120	98	28	779	3,680
I[illegible]							
[illegible]▲	Gen	Church	40	35	12	402	1,747
Paris, 9,194—Edgar							
Paris Hospital◇	Gen	NPAssn	75	51	12	463	2,523
Paxton, 3,801—Ford							
Paxton Community Hospital	Gen	NPAssn	19	12	8	218	774
Pekin, 21,912—Tazewell							
Pekin Public Hospital	Gen	NPAssn	91	75	21	726	3,383
Peoria, 111,523—Peoria							
Costeff Sanatorium	N&M	Corp	17	16	..	...	104
John C. Proctor Hospital◇	Gen	NPAssn	110	87	14	455	3,632
Methodist Hospital of Central Illinois★+▲◇	*Gen*	*Church*	*200*	*182*	*40*	*1,924*	8,063
Michell Sanatorium	N&M	NPAssn	50	45	..	...	164
Peoria Municipal Tuberculosis Sanitarium▲	TB	City	87	75	..	...	101
[illegible]▲	Ment	State	2,762	2,621	..	...	1,230
[illegible]▲	Gen	Church	530	395	92	2,975	15,721
F[illegible]							
[illegible]	Gen	NPAssn	50	42	10	173	1,213
F[illegible]							
[illegible]▲	*Gen*	*NPAssn*	*46*	*33*	*10*	*326*	*1,819*
P[illegible]							
[illegible]	TB	County	50	43	..	...	79
St. James Hospital	Gen	Church	50	43	17	428	1,394
Princeton, 5,737—Bureau							
Julia Rackley Perry Memorial Hospital	*Gen*	*City*	60	39	15	384	1,446
Quincy, 41,402—Adams							
Blessing Hospital▲◇	Gen	NPAssn	127	103	25	670	4,629
Hillcrest	TB	County	40	34	..	...	39

Key to symbols and abbreviations is on page 124

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
St. Mary's Hospital★▲◇	Gen	Church	200	160	30	892	7,386
Red Bud, 1,511—Randolph							
St. Clement's Hospital	Gen	Church	61	40	15	443	1,607
Robinson, 6,405—Crawford							
Edward Greer Hospital	Gen	Indiv	20	7	6	36	418
Schmidt Hospital	Gen	Part	25	16	4	156	1,005
Rochelle, 5,415—Ogle							
Rochelle Hospital	Gen	City	38	23	12	268	1,157
Rockford, 92,503—Winnebago							
[illegible]	N&M	Indiv	30	24	.	.	480
[illegible] ▲	Gen	NPAssn	128	108	25	816	5,312
[illegible] ▲	TB	City	100	74		..	133
St. Anthony's Hospital★+▲◇	Gen	Church	258	183	52	1,554	8,049
Swedish-American Hosp.★▲◇	Gen	NPAssn	125	121	30	1,150	5,463
Winnebago County Hospital	GenIso	County	90	61	6	44	669
Rock Island, 48,594—Rock Island							
Rock Island County Tuberculosis Sanatorium▲	TB	County	65	50		. .	73
St. Anthony's Hospital+▲◇	Gen	Church	185	165	30	967	5,512
Rushville, 2,673—Schuyler							
Culbertson Hospital	Gen	County	25	14	9	125	582
St. Charles, 6,691—Kane							
Delnor Hospital▲	Gen	NPAssn	27	22	10	293	1,354
Salem, 6,108—Marion							
Salem Memorial Hospital	Gen	NPAssn	38	22	10	418	1,781
Sandwich, 3,032—De Kalb							
Horatio N. Woodward Memorial Hospital	Gen	NPAssn	30	18	9	247	880
Savanna, 5,037—Carroll							
Savanna City Hospital	Gen	City	36	17	12	305	979
Shelbyville, 4,456—Shelby							
Shelby County Memorial Hospital	Gen	NPAssn	21	19	10	337	1,229
Springfield, 80,832—Sangamon							
Memorial Hospital★▲◇	Gen	NPAssn	250	168	40	972	6,162
Palmer Sanatorium▲	TB	Corp	75	69	..	...	121
St. John's Crippled Children's School and Hospital	Orth	Church	60	48	..	...	105
St. John's Hospital◇	Gen	Church	683	592	70	2,461	15,955
St. John's Sanitarium⊙	TB	Church	200	191	..	...	235
Spring Valley, 4,914—Bureau							
St. Margaret's Hospital	Gen	Church	120	87	15	470	3,396
Sterling, 12,761—Whiteside							
Community General Hospital▲	Gen	City	58	39	14	620	2,394
Home Hospital	Gen	NPAssn	25	16	6	146	701
Streator, 16,442—La Salle							
St. Mary's Hospital	Gen	Church	112	92	15	864	4,374
Sycamore, 5,917—De Kalb							
[illegible] ▲	Gen	City	28	21	12	258	907
[illegible]	Gen	Church	94	83	22	540	3,130
[illegible]	Gen	County	52	30	12	393	1,410
[illegible] ▲	Gen	NPAssn	72	60	12	477	3,138
[illegible]	Gen	County	55	28	7	94	647
[illegible] ▲	Gen	Church	124	99	25	1,010	5,503
[illegible]	TB	County	50	45	..	...	38
[illegible]	Gen	Indiv	35	25	12	464	1,646
Iroquois Hospital	Gen	NPAssn	39	27	13	521	1,586
Waukegan, 39,099—Lake							
Lake County General Hosp.▲	Gen	County	70	58	..	...	566
[illegible] ▲	TB	County	100	91	.	...	131
[illegible] ▲	Gen	Church	180	147	30	1,247	...
[illegible] ▲	Gen	NPAssn	127	101	28	943	4,722
[illegible]							
[illegible]		Church	72	56	..	...	1,456
W[illegible]							
Union Hospital	Indus	NPAssn	38	4	..	8	1,465
White Hall, 3,077—Greene							
White Hall Hospital	Gen	NPAssn	9	8	5	87	255
[illegible]							
[illegible] ▲	TB	NPAssn	71	66	..	...	79
[illegible]	TB	Indiv	48	42	..	...	84
[illegible] ▲	N&M	Corp	100	74	.	...	329
W[illegible]							
[illegible]	Gen	NPAssn	80	58	22	687	3,359
W[illegible]							
Woodstock Public Hospital	Gen	NPAssn	47	34	16	568	1,988

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bartlett, 608—Cook							
Herrick House	ChilCard	NPAssn	50	38	..	...	154
Batavia, 5,862—Kane							
Bellevue Place Sanitarium	N&M	Indiv	70	52	..	...	69
Belleville, 32,701—St. Clair							
St. Clair County Hospital and Home	Inst	County	98	79	2	...	99
Champaign, 39,397—Champaign							
Cole Hospital	Conv	Part	65	33	..	...	1,548
Chicago, 3,606,436—Cook							
Bigley Rest Home	Conv	Indiv	20	19	..	...	16
Brown's Convalescent Home	Conv	Indiv	35	28	..	...	123
Catherine Booth Memorial Convalescent Hospital	Conv	Church	29	25	..	...	101
Chicago Home for Incurables	Incur	NPAssn	274	271	..	...	62
Convalescent Home	Conv	City	164	133	..	...	490

ILLINOIS—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Drexel House	Conv	Indiv	25	18	..	...	36
House of Correction Hospital	Inst	City	75	4	..	...	2,194
Jewish Peoples Convalescent Home	Conv	NPAssn	50	30	..	...	430
[illegible]	Conv	Indiv	37	28	..	...	62
[illegible]	Conv	Indiv	22	19	..	...	60
[illegible] Dependent Crippled Children	Orth	NPAssn	27	21	..	...	23
Orthodox Jewish Home for the Aged	Chr	NPAssn	85	85	..	...	110
Rest Haven Convalescent Home	Conv	NPAssn	150	36	..	. .	395
Salvation Army Booth Memorial Hospital	Mat	Church	85	52	12	236	279
Washington and Jane Smith Home	InstGen	NPAssn	23	13	..	..	96
Decatur, 67,801—Macon							
City Public Hospital	Iso	City	20	2	..	..	156
Des Plaines, 14,975—Cook							
Northwestern Hospital	Gen	Corp	14	6	5	65	254
Dixon, 11,532—Lee							
Mansion Nursing Home	Conv	Part	22	17	..	...	54
Elgin, 43,534—Kane							
Dr. Weirick's Sanitarium	N&M	Part	20	8	..	...	470
Evanston, 73,030—Cook							
Broadhurst Nursing Home	Unit of Broad Nursing Homes						
Broad Nursing Homes	Conv	Part	61	56	..	...	104
Presbyterian Home-Hosp.	ConvInst	Church	56	16	..	...	175
The Cradle	Chil	NPAssn	60	39	..	...	250
Geneva, 5,032—Kane							
State Training School for Girls	Inst	State	22	10	..	...	153
Glenview, 6,112—Cook							
[illegible]	Conv	Part	31	27	..	...	23
[illegible]	MeDe	Corp	250	232	..	...	15
Abbott House	Conv	Corp	15	12	..	...	40
[illegible]	Conv	Part	17	16	..	...	31
Illinois Security Hospital	Ment	State	400	360	..	...	80
Mooseheart, 995—Kane							
Philadelphia Memorial Hosp.	Chil	NPAssn	65	37	..	...	2,264
Normal, 9,832—McLean							
Illinois Soldiers' and Sailors' [illegible]	Inst	State	55	10	..	...	830
O[illegible]							
[illegible]	Rad	Indiv	8	7	..	...	195
P[illegible]							
[illegible] Home	Conv	Indiv	18	18	..	..	3
Peoria, 111,523—Peoria							
Florence Crittenton Home	Mat	NPAssn	70	26	4	84	123
[illegible] Home	Conv	Part	28	26	..	...	49
P[illegible]							
[illegible] Hospital	Inst	State	40	2	..	...	753
Robinson, 6,405—Crawford							
Griffy Eye and Ear Infirmary	ENT	Indiv	11	1	..	...	165
[illegible]	Orth	NPAssn	35	21	..	...	41
[illegible]	Gen	Corp	20	13	5	89	933
St[illegible]							
[illegible] for Boys	Inst	State	19	10	..	...	1,350
[illegible]	Inst	Church	20	9	..	...	38
[illegible]	Inst	State	126	32	..	...	2,956
[illegible]	Conv	Indiv	40	32	..	...	86
Mary E. Pogue School	MeDe	Indiv	90	83	..	...	15

INDIANA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anderson, 46,809—Madison							
St. John's Hickey Memorial Hospital▲◇	Gen	Church	250	178	50	1,840	8,483
Angola, 5,082—Steuben							
Cameron Hospitals	Gen	NPAssn	22	11	8	177	603
Elmhurst Hospital	Gen	NPAssn	23	10	5	157	610
Auburn, 5,890—De Kalb							
Dr. Bonnell M. Souder Hosp.	Gen	Indiv	23	10	7	191	445
Batesville, 3,226—Ripley							
Margaret Mary Hospital	Gen	Church	63	55	24	714	2,246
Bedford, 12,566—Lawrence							
Dunn Memorial Hospital	Gen	County	62	54	12	830	3,667
Beech Grove, 5,689—Marion							
St. Francis Hospital+▲	Gen	Church	170	108	50	1,875	6,881
Bloomington, 28,191—Monroe							
Bloomington Hospital	Gen	NPAssn	75	69	25	1,036	4,283
Bluffton, 6,058—Wells							
Clinic Hospital+▲	Gen	Corp	100	57	8	133	2,628
Wells County Hospital	Gen	County	52	25	11	330	1,009
C[illegible]							
[illegible]	Gen	Army	1,600	...	Reopened 1950		
C[illegible]							
[illegible]	Gen	County	42	42	20	472	1,619

INDIANA—*Continued*

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Columbia City, 4,746—Whitley							
Memorial Hospital	Gen	NPAssn	21	15	..	...	577
Columbus, 18,365—Bartholomew							
[illegible] County Hosp.▲	Gen	County	75	67	15	908	3,888
[illegible]ette							
[illegible]ital	Gen	NPAssn	65	38	16	638	1,943
[illegible]							
[illegible]ital	Gen	NPAssn	23	...	12	Estab. 1950	
Crawfordsville, 12,804—Montgomery							
Montgomery County Culver Union Hospital▲	Gen	County	85	61	18	872	3,194
Crown Point, 5,862—Lake							
James O. Parramore Hosp.▲⊙	TB	County	246	225	..	...	182
Decatur, 7,272—Adams							
Adams County Memorial Hospital	Gen	*County*	50	31	18	513	1,911
Dyer, 1,557—Lake							
Mount Mercy Hospital and Sanitarium	N&M	Church	75	78	..	...	450
[illegible]—Lake							
[illegible]▲	Gen	Church	264	196	60	2,073	8,261
[illegible]▲	Gen	NPAssn	113	83	28	1,362	4,747
[illegible]▲	Gen	Church	45	40	15	788	2,177
Evansville, 109,869—Vanderburgh							
Boehne Tuberculcs's Hosp+▲	TB	County	130	116	..	...	293
Clearview Hospital	N&M	Indiv	30	24	..	...	160
Evansville State Hospital	Ment	State	1,200	1,247	..	...	282
Protestant Deaconess Hospital★+▲◇	Gen	Church	244	205	36	2,603	11,046
St. Mary's Hospital▲◇	Gen	Church	178	151	22	1,161	6,504
Welborn Memorial Baptist Hospital▲◇	Gen	Church	135	101	23	713	5,451
[illegible]—Marion							
[illegible]▲	Gen	Vet	500	424	..	...	3,489
[illegible]							
Irene Byron Sanatorium▲⊙	TB	Counties	268	264	..	...	216
Lutheran Hospital▲◇	Gen	Church	192	173	45	2,051	6,764
Methodist Hospital▲◇	Gen	Church	118	84	25	928	4,251
St. Joseph Hospital+▲◇	Gen	Church	290	250	60	1,860	10,391
Veterans Admin. Hospital	Gen	Vet	200	...	..	Estab. 1950	
Frankfort, 14,933—Clinton							
Clinton County Hospital	Gen	County	43	40	16	566	2,019
Franklin, 7,355—Johnson							
Johnson County Memorial Hospital	Gen	*County*	65	41	15	544	2,447
Garrett, 4,287—De Kalb							
Sacred Heart Hospital	Gen	Church	42	27	12	342	1,013
Gary, 132,496—Lake							
Methodist Hospital▲◇	Gen	Church	209	189	69	2,739	9,259
St. Mary's Mercy Hosp.+▲◇	Gen	Church	218	152	60	2,074	7,982
Goshen, 12,977—Elkhart							
Goshen Hospital	Gen	*NPAssn*	34	23	12	839	1,896
Greencastle, 6,856—Putnam							
Putnam County Hospital	Gen	County	48	34	12	501	2,125
Greensburg, 6,599—Decatur							
Decatur County Memorial Hospital	Gen	County	50	36	10	380	1,786
[illegible]—Lake							
[illegible]	N&M	Church	30	20	..	...	160
[illegible]▲	Gen	Church	260	203	60	2,784	10,844
[illegible]							
Blackford County Hospital	Gen	County	32	18	8	311	1,027
Huntingburg, 4,057—Dubois							
Stork Hospital	Gen	Indiv	27	27	16	589	1,663
Huntington, 15,033—Huntington							
Huntington County Hospital	Gen	County	46	28	16	737	1,802
Indianapolis, 424,683—Marion							
Central State Hospital+▲	Ment	State	2,724	2,089	..	...	439
Flower Mission Memorial Hospital	Unit of Indianapolis General Hospital						
Indianapolis General Hospital★+▲◇	GenTb	City	*685*	535	*56*	*1,513*	9,894
Indiana University Medical Center★+▲◇	Gen	State	615	513	71	1,917	11,198
James Whitcomb Riley Hospital for Children	[illegible] Medical Center						
Kiwanis Home	[illegible] Medical Center						
Methodist Hospital★+▲◇	[illegible]	[illegible]	[illegible]	[illegible]	100	5,006	23,383
Norways Sanatorium+	N&M	NPAssn	65	46	..	..	*603*
Robert W. Long Hospital	Unit of Indiana University Medical Center						
Rotary Convalescent Home	Unit of Indiana University Medical Center						
St. Vincent's *Hospital*★+▲◇	Gen	Church	*337*	*279*	50	2,521	12,504
Sunnyside Sanatorium+▲⊙	TB	County	220	212	..	...	186
Veterans Admin. Hospital+▲	Gen	Vet	347	294	..	...	3,626
William H. Coleman Hospital [illegible]	Unit of Indiana University Medical Center						
[illegible]k							
[illegible]▲	Gen	County	*85*	61	22	804	3,360
Kendallville, 6,123—Noble							
McCray Memorial Hospital	Gen	City	32	26	12	464	1,300
Kokomo, 38,600—Howard							
[illegible]Hosp.▲◇	Gen	Church	*125*	*120*	36	*1,360*	5,224
[illegible]noe							
[illegible]▲◇	Gen	NPAssn	135	91	25	1,060	4,677
[illegible]▲	Gen	Church	305	196	50	1,687	8,649
[illegible]	N&M	NPAssn	80	52	..	...	231
[illegible]	TB	County	27	23	..	...	39
[illegible]—LaGrange							
[illegible]ital	Gen	County	*34*	*14*	*11*	*132*	*636*
[illegible]							
[illegible]	Gen	NPAssn	76	56	21	671	2,859
[illegible]	Gen	Church	98	70	20	497	3,072

INDIANA—*Continued*

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]—Greene							
[illegible]y Hosp.	Gen	County	*50*	*28*	*12*	*403*	*2,178*
[illegible]+▲	Ment	State	1,972	2,294	..	...	1,007
[illegible]▲	Gen	County	70	*52*	15	*490*	*3,128*
[illegible]▲	Gen	Church	60	59	12	*569*	*2,398*
[illegible]ital	Gen	NPAssn	48	29	15	520	2,401
Marion, 30,059—Grant							
[illegible]	Gen	NPAssn	105	73	30	1,348	4,973
[illegible]▲	Ment	Vet	1,710	1,705	..	...	367
[illegible] Hospital	Gen	County	27	20	10	358	1,092
Michigan City, 28,379—La Porte							
Clinic Hospital▲	Gen	*Corp*	*50*	*46*	*12*	*198*	3,042
Indiana Hospital for Insane [illegible]	Ment	State	345	325	..	...	30
[illegible]	Inst	State	110	60	..	...	2,400
[illegible]▲	Gen	Church	100	68	23	742	3,211
[illegible]▲	Gen	Church	126	79	35	1,060	4,148
[illegible]	Proct	Part	23	18	..	...	322
Muncie, 58,364—Delaware							
[illegible]★+▲◇	Gen	NPAssn	*250*	*195*	*40*	*2,227*	*9,113*
Ne[illegible]							
[illegible]▲	Gen	Church	126	84	24	1,359	5,030
"Silvercrest" Southern Indiana *Tuberculosis Hospital*	TB	State	*128*	*122*	..	...	*143*
New Castle, 18,227—Henry							
Clinic Hospital	Gen	Part	22	20	..	...	1,030
Henry County Hospital▲	Gen	County	*110*	*86*	*23*	*1,264*	*4,525*
[illegible]							
[illegible]	Ment	State	1,600	1,546	..	...	366
[illegible]							
[illegible]	*Gen*	*Indiv*	*12*	*5*	*6*	*122*	*340*
Peru, 13,281—Miami							
Dukes-Miami County Hospital	Gen	County	69	56	16	715	2,142
[illegible]Hospital▲	Indus	NPAssn	50	30	..	...	683
[illegible]	Gen	County	31	20	12	473	1,313
[illegible]	Gen	County	*48*	*38*	*10*	435	*1,989*
Princeton, 7,636—Gibson							
Gibson General Hospital▲	Gen	NPAssn	46	34	18	638	2,127
Rensselaer, 4,085—Jasper							
Jasper County Hospital	Gen	County	40	33	10	511	*1,880*
[illegible]—Wayne							
[illegible]▲	Gen	NPAssn	144	126	20	1,670	6,460
[illegible]	Ment	State	1,774	1,590	..	...	389
[illegible]	TB	County	48	41	..	...	58
Rochester, 4,664—Fulton							
Woodlawn Hospital	Gen	County	33	28	16	420	1,357
Rockville, 2,459—Parke							
Indiana State Sanatorium	TB	State	200	174	..	...	192
Rome City, *504*—*Noble*							
Kneipp Springs Sanatorium	Gen	Church	125	79	..	...	1,876
Rushville, 6,754—Rush							
Rush Memorial Hospital	Gen	County	51	...	16	Estab. 1950	
Seymour, 9,635—Jackson							
[illegible]	Gen	*County*	56	36	16	804	3,728
Sl[illegible]							
[illegible]	Gen	City	47	38	18	677	2,065
South Bend, 115,698—St. Joseph							
Healthwin Hospital+▲	TB	County	189	113	..	...	149
Memorial Hospital★+▲◇	Gen	NPAssn	220	177	45	2,237	9,029
Northern Indiana Childrens Hospital	Orth	State	100	28	..	...	212
[illegible]★▲◇	Gen	Church	189	143	47	1,886	7,492
[illegible]							
[illegible]	Gen	County	*50*	*38*	*12*	*402*	*1,534*
Tell[illegible]							
Pe[illegible] Hospital	Gen	County	28	...	12	Estab. 1950	
Terre Haute, 64,047—Vigo							
Hoover's Sanatorium	Gen	Indiv	14	5	2	32	290
St. Anthony's Hospital★▲◇	Gen	Church	186	153	25	1,263	6,198
Union Hospital▲◇	Gen	NPAssn	166	137	24	1,100	5,874
U. S. Penitentiary Hospital▲	*Inst*	*USPHS*	98	21	..	...	799
Union City, 3,566—Randolph							
Union City Memorial Hospital	Gen	City	25	...	8	Estab. 1950	
Valparaiso, 11,966—Porter							
Porter Memorial Hospital▲	Gen	*County*	*96*	*75*	*30*	780	3,044
[illegible]—Knox							
[illegible]al▲◇	Gen	County	115	105	22	1,074	4,563
[illegible]Hosp.	TB	*County*	*60*	42	..	...	94
Wabash, 10,594—Wabash							
Wabash County Hospital	Gen	County	60	44	18	554	2,713
Warsaw, 6,589—Kosciusko							
McDonald Hospital	Gen	Indiv	48	*41*	*12*	*416*	2,058
Murphy Medical Center	Gen	Indiv	55	24	12	185	775
Washington, 10,949—Daviess							
Daviess County Hospital	Gen	County	86	79	10	864	4,742
Williamsport, 1,234—Warren							
Community Hospital	Gen	*NPAssn*	20	13	7	171	963
Winchester, 5,467—Randolph							
Randolph County Hospital	Gen	County	37	33	*11*	456	1,633
Wolf Lake, 250—Noble							
Luckey Hospital	*Gen*	*Indiv*	*18*	11	7	283	1,100

Key to symbols and abbreviations is on page 124

INDIANA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anderson, 46,809—Madison							
Citizens Nursing Center	Gen	Indiv	15	12	..	...	1,100
[illegible]	MeDe	State	1,630	1,418	..	...	139
[illegible]	MeDe	State	1,898	...	..	...	...
[illegible]	Inst	NPAssn	52	...	..	...	...
[illegible]	ENT	Part	12	5	..	...	1,742
Indiana State Soldiers' Home Hospital	Inst	State	120	83	..	...	412
[illegible]	Conv	Corp	148	110	..	...	4,015
[illegible]	Conv	Corp	120	44	..	...	2,128
Indiana State Reformatory Hospital	Inst	State	50	28	..	...	1,095
Plainfield, 2,589—Hendricks							
Indiana Boys' School Hospital	Inst	State	24	4	..	...	157

IOWA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albia, 4,823—Monroe							
Smith Hospital	Gen	Indiv	24	8	5	157	535
[illegible]	Gen	Church	40	37	12	449	1,383
[illegible]	Gen	NPAssn	20	9	9	86	380
Iowa State College Hosp.▲	Inst	State	75	12	..	...	1,106
Anamosa, 3,905—Jones							
Mercy Hospital	Gen	Church	35	26	10	299	1,125
Atlantic, 6,472—Cass							
Atlantic Memorial Hospital	Gen	NPAssn	50	40	10	402	1,617
Battle Creek, 827—Ida							
Battle Creek Hospital	Gen	Indiv	18	5	3	40	254
[illegible]	Gen	Church	20	6	5	119	475
Belmond, 2,175—Wright							
Steele Memorial Hospital	Gen	Part	12	9	7	187	559
Buffalo Center, 1,084—Winnebago							
Dolmage Hospital	Gen	Indiv	14	7	10	124	458
Burlington, 30,639—Des Moines							
Burlington Protestant Hospital▲◇	Gen	NPAssn	105	93	20	433	3,739
Mercy Hospital▲◇	Gen	Church	100	89	25	501	3,394
St. Francis Hospital	Gen	Church	67	47	15	296	1,889
[illegible] ▲	Gen	Church	115	93	35	945	4,409
[illegible] ▲	Gen	City	44	29	10	366	1,509
[illegible] ▲	Gen	Church	208	169	20	1,168	8,367
St. Luke's Methodist Hosp.★+▲◇	Gen	Church	200	172	35	1,508	8,682
[illegible] ▲	Gen	Church	50	43	12	431	2,165
[illegible]	Gen	Indiv	25	16	10	203	723
Cedar Valley Hospital	Gen	City	60	50	20	611	2,856
Cherokee, 7,696—Cherokee							
Cherokee State Hospital+	Ment	State	1,716	1,574	..	...	425
Sioux Valley Hospital▲	Gen	NPAssn	35	29	12	547	2,556
Clarinda, 5,077—Page							
Clarinda [illegible]	Gen	City	45	33	9	307	1,942
[illegible]	Ment	State	1,170	1,505	..	...	480
C[illegible]							
[illegible] ▲	Gen	NPAssn	100	68	16	577	2,963
[illegible] ▲	Gen	Church	100	79	25	602	2,138
[illegible]	[illegible]	Corp	15	2	2	41	168
[illegible] ▲	Gen	NPAssn	136	102	20	1,090	5,566
[illegible] ▲	Gen	Church	185	140	30	827	5,574
[illegible]	N&M	Church	200	183	..	...	679
Cresco, [illegible]—Howard							
St. Joseph Mercy Hospital	Gen	Church	35	16	10	273	1,013
Davenport, 73,640—Scott							
Mercy Hospital▲◇	Gen	Church	253	192	61	1,460	8,923
Pine Knoll Sana[illegible]	TB	County	70	53	..	...	65
[illegible]	Units of Mercy Hospital						
[illegible] ▲	Gen	Church	90	79	22	861	3,752
[illegible] ▲	Gen	Church	52	36	10	476	1,780
[illegible]	Gen	Indiv	21	12	12	321	1,352
Broadlawns Polk County Hospital★+▲◇	GenIso	County	177	127	21	346	4,537
Broadlawns Polk County Hospital▲	TB	County	90	86	..	...	45
Iowa Lutheran Hospital★▲◇	Gen	Church	135	135	20	1,195	6,012
Iowa Methodist Hospital★+▲◇	Gen	Church	312	266	45	1,732	11,969
Mercy Hospital★+▲◇	Gen	Church	190	169	30	1,675	8,508
Raymond Blank Memorial Hospital for Children+	Unit of Iowa Methodist Hospital						
Retreat Hospital	N&M	Corp	50	48	..	...	352

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Veterans Admin. Center+▲	Gen	Vet	398	412	..	...	6,184
Dexter, 760—Dallas							
Chapler-Osborn Clinic Hosp.	Gen	Part	25	20	7	97	695
Dubuque, 49,528—Dubuque							
Finley Hospital▲◇	Gen	NPAssn	103	72	20	518	3,497
St. Joseph Mercy Hospital▲◇	Gen	Church	348	150	30	626	5,159
St. Joseph Sanitarium⊙	N&M	Church	232	224	..	...	656
Sunny Crest Sanatorium▲	TB	County	70	47	..	...	45
Xavier Hospital	Gen	Church	100	78	22	941	3,981
Emmetsburg, 3,751—Palo Alto							
[illegible]	Gen	NPAssn	35	22	11	302	1,365
[illegible]	Gen	Church	60	43	14	585	2,882
Forest City, 2,758—Winnebago							
Forest City Municipal Hosp.	Gen	City	26	9	6	333	875
Fort Dodge, 25,025—Webster							
Lutheran Hospital▲	Gen	Church	185	104	25	1,148	5,847
St. Joseph Mercy Hospital▲◇	Gen	Church	175	93	25	800	4,399
Fort Madison, 14,943—Lee							
Sacred Heart Hospital	Gen	Church	80	57	15	575	4,247
Grinnell, 6,770—Poweshiek							
Community Hospital	Gen	NPAssn	40	26	6	142	1,200
St. Francis Hospital	Gen	Church	40	32	10	324	1,528
[illegible]	Gen	Indiv	28	20	6	190	1,450
[illegible] ▲	Gen	Church	48	27	12	445	1,564
[illegible]	Gen	Part	12	7	5	127	465
Hull Hospital	Gen	Corp	14	9	5	134	564
Ida Grove, 2,198—Ida							
Ida Grove Hospital	Gen	City	19	13	7	154	557
Independence, 4,851—Buchanan							
Independence State Hospital⊙	Ment	State	1,569	1,620	..	...	814
Peoples Hospital	Gen	NPAssn	35	25	18	149	1,495
Iowa City, 27,018—Johnson							
Children's Hospital	Unit of University Hospitals						
Iowa State Psychopathic Hospital+⊙	Ment	State	60	51	..	...	364
Mercy Hospital+▲◇	Gen	Church	188	151	33	899	6,073
University Hospitals★+▲◇	Gen	State	891	710	55	1,184	18,210
Keokuk, 16,076—Lee							
Graham Hospital	Gen	NPAssn	65	63	15	428	2,661
St. Joseph's Hospital	Gen	Church	152	109	20	429	4,266
[illegible]	Gen	Part	30	18	5	179	1,211
Veterans Admin. Hospital▲⊙	Ment	Vet	1,631	1,612	..	...	240
Lake City, 2,298—Calhoun							
McCrary Rost Hospital	Gen	Part	18	13	5	121	627
McVay Memorial Hospital	Gen	Part	17	12	6	132	590
Laurens, 1,537—Pocahontas							
Hovenden Memorial Hospital	Gen	NPAssn	15	6	7	170	418
Le Mars, 5,846—Plymouth							
Sacred Heart Hospital▲	Gen	Church	68	38	15	716	2,172
Leon, 2,113—Decatur							
Decatur County Hospital	Gen	County	27	22	7	301	1,319
Manchester, 3,969—Delaware							
Delaware County Memorial Hospital	Gen	County	43	...	10	Estab. 1950	
Marshalltown, 19,750—Marshall							
Evangelical Deaconess Home and Hospital◇	Gen	Church	150	124	22	627	4,147
St. Thomas Mercy Hospital	Gen	Church	102	80	20	511	2,321
Mason City, 27,593—Cerro Gordo							
[illegible] ▲	Gen	Corp	56	40	15	314	1,898
[illegible] ▲	Gen	Church	200	192	56	1,191	7,786
[illegible]	Gen	NPAssn	15	7	4	107	258
[illegible]	Gen	NPAssn	35	22	10	241	2,010
Mount Pleasant State Hosp.	Ment	State	1,602	1,355	..	...	383
Muscatine, 19,483—Muscatine							
Bellevue Hospital	Gen	NPAssn	50	53	10	301	1,947
Benjamin Hershey Memorial Hospital	Gen	NPAssn	50	40	14	421	1,927
New Hampton, 3,311—Chickasaw							
St. Joseph's Hospital▲	Gen	Church	50	39	10	367	1,942
Newton, 11,699—Jasper							
Skiff Memorial Hospital▲	Gen	City	56	33	10	410	1,571
Oakdale,—*Johnson*							
State Sanatorium+▲	TB	State	436	398	..	...	347
Oelwein, 7,838—Fayette							
Mercy Hospital	Gen	Church	43	30	15	413	1,767
Onawa, 3,488—Monona							
Onawa Hospital	Gen	Indiv	28	20	8	126	801
[illegible]	Gen	Part	20	7	7	187	470
Harken Hospital	Gen	Indiv	22	7	5	54	659
Osceola Hospital	Gen	Indiv	28	15	5	235	1,009
Oskaloosa, 11,095—Mahaska							
Mercy Hospital	Gen	Part	31	22	8	283	1,259
[illegible]							
[illegible]	Gen	NPAssn	58	50	10	453	2,598
[illegible] ▲	Gen	Church	125	97	25	809	5,247
Sunnyslope Sanatorium	TB	County	63	47	..	...	76
Perry, 6,161—Dallas							
Kings Daughters Hospital	Gen	NPAssn	30	22	6	223	1,130
Pleasantville, 895—Marion							
Community Hospital	Gen	Indiv	10	5	4	27	115
Red Oak, 6,451—Montgomery							
Murphy Memorial Hospital▲	Gen	City	40	28	12	424	1,371

Key to symbols and abbreviations is on page 124

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissison†
Shenandoah, 6,917—Page							
Henry and Catherine L. Hand Memorial Hospital	Gen	NPAssn	41	27	10	292	1,464
Sibley, 2,546—Osceola							
Osceola Hospital	Gen	Corp	35	19	12	305	1,145
Sigourney, 2,334—Keokuk							
Sigourney Hospital	Gen	Indiv	18	8	6	181	481
Sioux City, 84,035—Woodbury							
Lutheran Hospital▲◇	Gen	Church	86	88	15	505	3,565
Methodist Hospital▲◇	Gen	Church	110	111	15	774	5,013
St. Joseph Mercy Hospital★▲◇	Gen	Church	250	237	50	973	9,495
St. Vincent's Hospital▲◇	Gen	Church	122	139	22	889	5,959
Spencer, 7,421—Clay							
Spencer Municipal Hospital	Gen	City	26	21	12	445	2,688
Spirit Lake, 2,469—Dickinson							
Marcus Snyder Memorial Hospital	Gen	Indiv	21	18	4	149	862
Storm Lake, 6,930—Buena Vista							
Porath Hospital	Gen	Indiv	11	14	5	488	728
Vinton, 4,305—Benton							
Virginia Gay Hospital	Gen	City	30	20	6	192	880
▲	Gen	County	54	34	12	506	1,391
▲	Gen	NPAssn	110	94	30	1,390	5,608
St. Francis Hospital▲	Gen	Church	125	99	24	1,134	5,731
Waukon, 3,150—Allamakee							
Veterans' Memorial Hospital	Gen	Church	26	...	8	Estab. 1950	
Waverly, 5,097—Bremer							
St. Joseph Mercy Hospital▲	Gen	Church	50	21	18	334	1,110
West Union, 2,133—Fayette							
West Union Community Hosp.	Gen	NPAssn	19	16	5	182	589
Williamsburg, 1,176—Iowa							
Miller Hospital	Gen	Indiv	8	5	5	81	209

Related Institutions

Davenport, 73,640—Scott							
Isolation Hospital	Iso	County	30	7	1	...	351
Des Moines, 176,954—Polk							
Junior League Convalescent Home for Children	Conv	NPAssn	18	15	..	...	41
Salvation Army Booth Memorial Hospital	Mat	Church	50	33	15	109	151
Glenwood, 4,662—Mills							
Glenwood State School	MeDe	State	2,001	...	..	...	..
Marshalltown, 19,750—Marshall							
Iowa Soldiers' Home Hosp.	Inst	State	160	127	..	..	239
Postville, 1,340—Allamakee							
Postville Community Hosp.	Gen	City	16	14	6	150	567
Red Oak, 6,451—Montgomery							
Powell School	MeDe	Indiv	70	70	..	...	6
Sac City, 3,164—Sac							
Loring Hospital	Gen	NPAssn	33	25	8	8	25
Sioux City, 84,035—Woodbury							
Florence Crittenton Home	Mat	NPAssn	40	35	40	83	154
Toledo, 2,106—Tama							
State Juvenile Home Hospital	Inst	State	25	4	..	...	200
Woodward, 895—Dallas							
Woodward State Hospital and School	MeDe	State	1,701	1,626	5	...	218

KANSAS

Hospitals and Sanatoriums

Abilene, 5,580—Dickinson							
Dickinson County Memorial Hospital	Gen	NPAssn	35	29	9	123	1,029
	Gen	Indiv	19	14	4	22	265
	Gen	Indiv	29	18	6	89	778
Atchison, 12,759—Atchison							
Atchison Hospital	Gen	NPAssn	55	35	12	436	1,811
Atwood, 1,613—Rawlins							
Rawlins County Hospital	Gen	Church	32	...	6	Estab. 1950	
Axtell, 545—Marshall							
Axtell Hospital	Gen	Indiv	11	6	6	103	469
Belleville, 2,858—Republic							
Belleville Hospital	Gen	Indiv	26	12	4	156	627
Beloit, 4,079—Mitchell							
Community Hospital▲	Gen	NPAssn	54	31	15	402	1,572
Caldwell, 1,997—Sumner							
Caldwell General Hospital	Gen	Indiv	20	6	5	85	441
Clay Center, 4,518—Clay							
Clay Center Municipal Hosp.	Gen	City	25	18	10	273	1,073
Coffeyville, 17,114—Montgomery							
Coffeyville Memorial Hospital	Gen	City	77	36	20	501	2,115
Colby, 3,843—Thomas							
St. Thomas Hospital	Gen	Church	72	26	25	437	1,641
Concordia, 7,139—Cloud							
St. Joseph's Hospital▲◇	Gen	Church	180	80	20	487	3,880
Dodge City, 11,237—Ford							
St. Anthony's Hospital▲◇	Gen	Church	70	50	22	518	2,642
Trinity Hospital▲	Gen	Church	60	...	14	Estab. 1950	
El Dorado, 10,923—Butler							
Susan B. Allen Memorial Hospital▲◇	Gen	NPAssn	54	42	8	514	2,806
Ellsworth,—Ellsworth							
Ellsworth County Veterans Memorial Hospital	Gen	NPAssn	45	34	9	218	1,232
Emporia, 15,560—Lyon							
Newman Memorial County Hospital▲◇	Gen	County	85	75	20	453	2,597
St. Mary's Hospital▲	Gen	Church	75	51	20	379	2,234

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Eureka, 3,955—Greenwood							
Basham Hospital	Gen	Part	26	19	6	102	720
Fort Leavenworth, 4,982—Leavenworth							
U. S. Army Hospital▲	Gen	Army	75	43	15	447	2,097
Fort Riley,—Geary							
U. S. Army Hospital▲	Gen	Army	550	247	30	627	10,163
Fort Scott, 9,992—Bourbon							
Mercy Hospital▲◇	Gen	Church	110	95	12	447	3,362
Fowler, 563—Meade							
Fowler Community Hospital	Gen	NPAssn	17	...	7	...	...
Garden City, 10,892—Finney							
St. Catherine's Hospital▲◇	Gen	Church	68	60	16	714	2,950
Gardner, 510—Johnson							
Reece Hospital	Gen	Indiv	21	13	6	92	273
Girard, 2,412—Crawford							
Girard General Hospital	Gen	City	22	15	4	118	588
Goessel, 300—Marion							
	Gen	NPAssn	26	10	6	145	515
	Gen	Church	50	22	14	...	1,524
▲	Gen	Church	127	126	26	1,117	6,228
Halstead, 1,316—Harvey							
Halstead Hospital▲◇	Gen	Church	160	135	8	13	3,920
Harper, 1,667—Harper							
Joslin Hospital	Gen	Indiv	10	6	4	58	299
Hays, 8,600—Ellis							
▲	Gen	NPAssn	75	33	12	248	2,161
▲	Gen	Church	110	103	25	806	4,423
Salem Hospital	Gen	Church	25	13	6	106	543
	Gen	NPAssn	21	14	6	174	576
	Gen	Part	44	25	13	174	1,106
Hutchinson, 33,524—Reno							
Grace Hospital▲◇	Gen	Church	140	106	30	676	4,772
St. Elizabeth Mercy Hosp.▲◇	Gen	Church	65	74	20	557	2,619
Independence, 11,432—Montgomery							
Mercy Hospital▲	Gen	Church	70	57	20	465	2,008
Iola, 7,081—Allen							
St. John's Hospital	Gen	Church	36	24	12	300	1,403
Junction City, 13,370—Geary							
Junction City Municipal Hosp.	Gen	City	67	47	20	377	2,214
Kansas City, 129,583—Wyandotte							
Bell Memorial Hospital	Unit of University of Kansas Medical Center						
Bethany Hospital★▲◇	Gen	Church	150	126	30	888	6,386
Douglass Hospital	Gen	Church	50	35	12	178	1,115
Providence Hospital★▲◇	Gen	Church	140	126	35	1,320	6,137
St. Margaret's Hospital★+▲◇	Gen	Church	196	115	22	558	6,142
University of Kansas Medical Center★+▲◇	Gen	State	442	379	45	1,153	9,581
Kinsley, 2,480—Edwards							
Edwards County Hospital	Gen	Church	21	...	4	Estab. 1950	
La Crosse, 1,764—Rush							
Rush County Memorial Hospital	Gen	County	26	...	6	Estab. 1950	
Larned, 4,442—Pawnee							
Larned State Hospital	Ment	State	1,837	1,781	..	...	234
Lawrence, 23,292—Douglas							
	Inst	IA	36	3	..	...	150
▲	Gen	City	72	52	25	951	3,197
▲	Inst	State	62	16	..	...	1,506
▲	Gen	NPAssn	60	46	15	336	1,962
▲	Gen	Church	67	46	14	346	1,627
▲	Inst	USPHS	142	48	..	...	1,088
Epworth Hospital	Gen	NPAssn	40	34	12	417	1,949
	Gen	NPAssn	23	14	7	76	385
Little River, 603—Rice							
Hoffman Memorial Hospital	Gen	City	14	8	3	25	200
Lyons, 4,540—Rice							
Lyons Hospital	Gen	NPAssn	20	10	6	145	630
▲	Gen	Church	98	69	25	715	3,359
Marion, 2,045—Marion							
Marion Hospital	Gen	NPAssn	12	7	4	69	381
Marysville, 3,860—Marshall							
Randall Hospital	Gen	Indiv	16	8	6	145	450
	Gen	County	53	46	12	315	1,556
Nashville, 212—Kingman							
Nashville Hospital	Gen	NPAssn	8	2	5	73	289
Neodesha, 3,716—Wilson							
Wilson County Hospital	Gen	County	31	15	14	124	770
Newton, 11,541—Harvey							
Axtell Christian Hospital▲	Gen	Church	42	28	8	119	1,518
Bethel Deaconess Hospital▲◇	Gen	Church	84	66	16	455	2,591
Norton, 3,058—Norton							
Norton County Hospital	Gen	County	31	14	10	316	952
State Sanatorium for Tuberculosis▲	TB	State	424	388	..	9	401
Oberlin, 2,019—Decatur							
Decatur County Hospital	Gen	County	22	...	6	Estab. 1950	
Osawatomie, 4,334—Miami							
Osawatomie State Hospital	Ment	State	1,715	1,633	..	...	216
Ottawa, 10,051—Franklin							
Ransom Memorial Hospital	Gen	County	42	27	15	443	1,773
Parsons, 14,706—Labette							
Mercy Hospital▲◇	Gen	Church	75	49	22	466	2,216
Missouri-Kansas-Texas Railroad Employes' Hospital	Indus	NPAssn	62	25	..	...	388
State Hospital for Epileptics	Epil	State	851	728	..	...	47

Key to symbols and abbreviations is on page 124

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
[illegible]—Crawford							
[illegible]	Gen	Church	104	96	12	629	4,027
[illegible]	Gen	City	24	20	12	321	1,297
[illegible]	Gen	Church	50	29	12	223	1,591
St. Francis, 1,884—Cheyenne							
St. Francis Hospital	Gen	Indiv	28	8	4	156	607
St. John, 1,732—Stafford							
St. John Veterans Memorial Hospital	Gen	CyCo	20	12	6	49	583
[illegible]	Gen	Church	75	64	12	495	3,095
St. John's Hospital▲◇	Gen	Church	85	82	20	540	2,987
Scott City, 3,191—Scott							
Scott County Hospital	Gen	County	15	4	8	137	562
Seneca, 1,910—Nemaha							
Seneca Hospital	Gen	Church	23	16	12	151	869
Spearville, 603—Ford							
Perkins Hospital	Gen	NPAssn	17	8	5	88	447
[illegible]	Gen	CyCo	28	16	8	96	649
Donohue Memorial Hospital	Gen	County	26	15	13	173	630
Topeka, 77,827—Shawnee							
Atchison, Topeka and Santa Fe Railway Hospital▲	Indus	NPAssn	140	139	..	...	3,156
[illegible]	N&M	NPAssn	70	54	..	...	162
[illegible]	Gen	Church	100	89	26	871	3,807
Hospital	Gen	NPAssn	75	64	..	...	2,786
State Sanatorium, Hillcrest Division	TB	State	20	17	..	...	101
Stormont-Vail Hospitals▲◇	Gen	NPAssn	193	159	51	1,609	7,524
Topeka State Hospital	Ment	State	1,627	1,580	..	..	173
Vail Hospital	See Stormont-Vail Hospitals						
Veterans Admin. Hospital+▲	Ment	Vet	1,400	1,147	..	...	5,140
Wadsworth, 2,300—Leavenworth							
Veterans Admin. Center+▲	Gen	Vet	1,082	986	..	...	8,042
Wamego, 1,873—Pottawatomie							
Genn Hospital	Gen	City	15	8	4	130	631
Wellington, 7,770—Sumner							
Hatcher Hospital▲	Gen	NPAssn	25	12	7	47	673
St. Luke's Hospital	Gen	City	33	23	8	231	1,266
Westmoreland, 532—Pottawatomie							
Dechairo Hospital	Gen	Indiv	10	7	3	56	290
Wichita, [illegible]—Sedgwick							
[illegible]	Gen	Church	465	371	65	2,174	16,071
[illegible]	Gen	Church	120	100	..	...	3,176
[illegible]	Gen	County	65	52	6	176	2,327
Sedgwick County [illegible]	TB	County	25	17	..	...	36
[illegible]	Gen	Vet	256	216	..	...	3,592
[illegible]	Gen	Church	380	364	60	2,504	15,660
[illegible]	Gen	Church	140	126	25	670	4,849
St. Mary's Hospital▲◇	Gen	Church	55	42	9	87	1,695
William Newton Memorial Hospital▲◇	Gen	City	53	54	10	379	2,346

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ashland, 1,483—Clark							
Ashland Hospital	Gen	NPAssn	11	6	8	86	334
Esbon, 292—Jewell							
Hershner Hospital	Proct	Indiv	25	9	..	...	250
Fort Dodge, 550—Ford							
Kansas State Soldiers' Home Hospital	Inst	State	32	6	1	1	97
[illegible]	Gen	County	10	3	2	41	170
[illegible]	Inst	State	57	9	..	...	807
[illegible]	Gen	City	21	17	8	106	958
[illegible]	Mat	NPAssn	20	15	16	40	45
[illegible]	Mat	Church	50	28	30	106	119
[illegible]	N&M	Part	33	25	..	...	64
Winfield, [illegible]—Cowley							
State Training School	MeDe	State	1,460	1,415	..	...	64

KENTUCKY

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anchorage, 609—Jefferson							
Pleasant Grove Hospital	N&M	NPAssn	65	56	..	...	477
Ary, 34—Perry							
[illegible]	Gen	NPAssn	22	12	6	29	277
[illegible]	Inst	USPHS	32	7	..	...	361
[illegible]	Gen	NPAssn	150	117	26	1,383	6,580
[illegible]	Gen	Part	26	9	6	112	530
[illegible]	Gen	NPAssn	70	25	8	323	2,155
[illegible], 500—Bell							
Red Bird Evangelical Hospital	Gen	Church	11	4	5	92	367
Bowling Green, 18,424—Warren							
City Hospital	Gen	City	55	40	14	803	2,609

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Campbellsville, 3,452—Taylor							
Rosary Hospital	Gen	Church	33	12	12	255	905
[illegible]—Union							
[illegible]	Gen	Army	500	...	Reopened		1950
[illegible]	Gen	County	26	...	13	Estab.	1950
[illegible]							
Jackson Hospital	Gen	Indiv	14	9	4	58	525
Corbin, 7,715—Whitley							
Smith Hospital	Gen	Indiv	38	15	9	301	1,045
[illegible]	Gen	Church	308	229	52	2,400	9,247
[illegible]	Gen	Church	118	89	22	1,320	4,223
Cynthiana, 4,832—Harrison							
[illegible]	Gen	NPAssn	32	18	8	270	886
Memorial Hospital	Gen	NPAssn	76	64	24	730	3,713
Kentucky State Hospital	Ment	State	1,599	1,354	..	...	525
Dayton, 8,943—Campbell							
Speers Memorial Hospital▲	Gen	County	100	70	20	670	2,795
Fort Campbell,—Christian							
U. S. Army Hospital	Gen	Army	300	178	16	573	4,008
Fort Knox,—Hardin							
U. S. Army Hospital▲	Gen	Army	400	347	23	1,035	9,384
Fort Thomas, 10,830—Campbell							
Veterans Admin. Hospital▲	Gen	Vet	395	311	..	...	1,088
Frankfort, 11,949—Franklin							
[illegible]	Gen	NPAssn	75	66	16	704	4,290
[illegible]	Gen	Church	17	6	8	106	611
Fulton, 3,189—Fulton							
Fulton Hospital	Gen	Corp	40	23	7	208	1,129
Haws Memorial Hospital	Gen	Indiv	30	22	6	122	910
Georgetown, 5,465—Scott							
John Graves Ford Memorial Hospital	Gen	Corp	33	20	12	222	1,256
Glasgow, 6,964—Barren							
Clinic Hospital	Gen	Corp	49	48	3	7	519
T. J. Samson Community Hospital▲	Gen	NPAssn	82	46	16	914	3,453
Grayson, 1,369—Carter							
J. Q. Stovall Memorial Hosp.	Gen	Part	20	13	6	236	921
Greenville, 2,644—Muhlenberg							
Muhlenberg Community Hosp.	Gen	NPAssn	57	39	16	649	2,772
Harlan, 4,779—Harlan							
Harlan Hospital	Gen	Corp	75	38	10	289	2,749
Hartford, 1,579—Ohio							
Reynolds Clinic-Hospital	Gen	Indiv	10	...	4	63	100
Hazard, 6,850—Perry							
Mount Mary Hospital	Gen	Church	76	57	10	322	3,488
Henderson, 16,760—Henderson							
[illegible]	Gen	Church	80	45	20	560	2,197
[illegible]							
[illegible] Hospital▲◇	Gen	NPAssn	85	60	20	578	3,007
Western State Hospital	Ment	State	2,000	1,892	..	...	386
Hyden, 500—Leslie							
Hyden Hospital of the Frontier Nursing Service	Gen	NPAssn	19	10	8	181	583
Jenkins, 6,933—Letcher							
Sharon Heights Hospital	Gen	Church	34	16	7	30	707
Kuttawa, 1,125—Lyon							
Dyer Hospital	Gen	Indiv	21	14	6	42	425
Lackey, 472—Floyd							
Stumbo Memorial Medical Foundation Hospital	Gen	NPAssn	88	12	6	93	1,097
La Grange, 1,557—Oldham							
Mallery Taylor Memorial Hospital	Gen	City	30	21	8	259	999
Lakeland, 55—Jefferson							
Central State Hospital	Ment	State	2,106	2,040	..	...	564
Lebanon, 4,643—Marion							
Mary Immaculate Hospital	Gen	Church	35	22	14	652	1,760
Lexington, [illegible]—Fayette							
[illegible]	Ment	State	2,000	1,706	..	...	465
[illegible]	Gen	Church	300	293	35	1,153	9,868
[illegible]	TB	County	115	113	..	...	139
Our Lady of the Oaks Hosp.⊙	N&M	Church	35	24	..	...	843
St. Joseph Hospital★+▲◇	Gen	Church	314	217	38	1,273	10,388
Shriners Hospital for Crippled Children▲	Orth	NPAssn	20	21	..	...	81
U. S. Public Health Service Hospital+▲	DrugMent	USPHS	1,400	1,293	..	...	4,059
Veterans Admin. Hospital+▲○	Ment	Vet	1,230	1,158	..	...	1,321
Wayside Hospital	N&M	Corp	28	10	..	...	271
[illegible]							
[illegible]	Gen	Church	35	14	10	233	958
[illegible]	Gen	Indiv	20	11	10	223	727
[illegible]	Chil	NPAssn	75	42	..	...	1,335
[illegible]	TB	State	215	203	..	...	359
[illegible]	Gen	NPAssn	100	68	15	538	3,587
Kentucky Baptist Hosp.★▲◇	Gen	Church	285	259	36	2,423	11,735
Kentucky Treatment Center	Ven	State	120	79	..	...	3,047
Kosair Crippled Children Hospital+▲	Orth	NPAssn	100	98	..	...	1,679
[illegible]	Gen	CyCo	384	277	35	2,092	10,076
[illegible]	Gen	Church	64	52	12	381	2,733
Norton Memorial Infirmary★+▲◇	Gen	NPAssn	280	204	30	1,245	9,197
Red Cross Hospital▲	Gen	NPAssn	65	44	10	237	1,400
St. Anthony's Hospital★▲◇	Gen	Church	220	160	30	1,386	7,738
St. Joseph Infirmary★+▲◇	Gen	Church	400	309	60	2,135	13,561

Key to symbols and abbreviations is on page 124

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
SS. Mary and Elizabeth Hospital★▲◇	Gen	Church	175	149	60	2,247	7,461
Veterans Admin. Hospital+▲	Gen	Vet	1,000	825	..	...	8,575
Lynch, 7,946—Harlan							
Lynch Hospital	Gen	NPAssn	55	30	8	233	1,132
Madisonville, 11,136—Hopkins							
Hopkins County Hospital	Gen	NPAssn	71	36	16	569	2,329
Marion, 2,380—Crittenden							
Crittenden County Hospital	Gen	NPAssn	23	14	11	188	648
Martin, 1,166—Floyd							
Our Lady of the Way Hosp.	Gen	Church	25	15	4	105	1,057
Mayfield, 8,959—Graves							
Fuller-Gilliam Hospital	Gen	Part	35	20	8	256	1,211
Fuller-Morgan Hospital and Clinic	Gen	Part	10	...	1	Estab. 1950	
Mayfield Hospital	Gen	NPAssn	30	10	9	200	1,280
Maysville, 8,508—Mason							
	Gen	NPAssn	82	60	18	688	3,093
	Gen	Corp	68	43	12	305	1,823
	en	Church	22	13	7	169	612
Mary Chiles Hospital	Gen	NPAssn	29	18	8	406	1,212
Murray, 6,011—Calloway							
Murray Hospital	Gen	NPAssn	58	29	15	419	1,877
Oneida, 300—Clay							
Oneida Maternity Hospital	Mat	State	25	20	22	961	1,320
Outwood, 50—Christian							
Veterans Admin. Hospital▲	TB	Vet	344	292	.	...	862
Owensboro, 33,983—Daviess							
Our Lady of Mercy Hospital	Gen	Church	60	44	15	569	2,583
Owensboro-Daviess County Hospital▲◇	Gen	CyCo	165	110	22	1,032	5,645
Paducah, 12,430—McCracken							
Ewart Purcell Isolation Hosp.	Unit of Riverside Hospital						
Illinois Central Hospital▲	Indus	NPAssn	90	49	..	...	2,845
Riverside Hospital▲	GenIso	City	114	81	28	1,046	4,925
Paintsville, 4,290—Johnson							
Paintsville Clinic-Hospital	Gen	Indiv	30	7	5	148	572
Paris, 6,901—Bourbon							
Massie Memorial Hospital▲	Gen	City	50	25	9	300	1,258
State Tuberculosis	TB	State	100	...	..	Estab. 1950	
Pew							
Hospital	Gen	NPAssn	60	30	8	43	203
Pineville, 3,879—Bell							
Pineville Community Hospital	Gen	Corp	77	70	11	375	2,954
Richmond, 10,217—Madison							
	Trac	State	38	8	..	...	81
	Gen	NPAssn	70	45	16	466	2,433
	Gen	County	24	19	6	232	899
Scottsville, 1,984—Allen							
	Gen	Part	15	4	4	118	319
	Gen	NPAssn	45	31	13	360	1,889
Somerset, 7,005—Pulaski							
	Gen	City	70	56	20	697	3,265
	Gen	Indiv	14	12	7	216	625
Hospital	Gen	NPAssn	32	18	8	281	1,333
Waverly Hills, 250—Jefferson							
Waverly Hills Tuberculosis Sanatorium+▲	TB	CyCo	400	377	..	...	438
West Prestonsburg, 250—Floyd							
Prestonsburg General Hosp.	Gen	Part	33	15	5	220	1,500
Winchester, 9,157—Clark							
Clark County Hospital	Gen	NPAssn	50	36	8	247	1,505
Guerrant Memorial Hospital	Gen	NPAssn	25	12	4	43	391

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Fleming, 1,193—Fletcher							
Fleming Hospital	Gen	Part	40	6	4	49	330
Frankfort, 11,949—Franklin							
Kentucky Training Home	MeDe	State	714	714	..	...	65
La Grange, 1,557—Oldham							
l	Inst	State	102	21	..	...	840
	Incur	NPAssn	100	97	..	...	32
	Gen	NPAssn	17	4	7	80	292
	Gen	Corp	25	14	8	220	1,248

LOUISIANA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
	Gen	Indiv	22	5	5	148	686
	Gen	Part	45	20	10	392	2,988
	Gen	Church	210	121	40	698	8,023
	Gen	Indiv	35	20	5	118	1,460
	Gen	Church	100	...	25	Estab. 1950	
	GenTb	Vet	662	471	..	...	3,657
	Gen	Part	11	5	4	16	219

LOUISIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Bastrop, 12,775—Morehouse							
		Church	33	25	10	373	2,271
B							
		Church	250	149	65	1,139	7,557
Our Lady of the Lake Sanitarium▲◇	Gen	Church	225	144	62	2,275	11,503
Bogalusa, 17,722—Washington							
Bogalusa Community Medical Center▲◇	Gen	NPAssn	86	47	14	373	3,833
	Gen	Indiv	17	12	6	185	934
B							
	Gen	Part	18	8	8	160	630
McConnell-Dupree Clinic and Hospital	Gen	Part	11	8	4	95	569
Camp Polk,—Vernon							
U. S. Army Hospital	Gen	Army	600	...	Reopened 1950		
Carville, 250—Iberville							
U. S. Marine Hospital▲	Lepr	USPHS	450	389	..	...	95
Church Point, 2,888—Acadia							
Church Point Sanitarium	Gen	Indiv	32	12	9	288	829
Clinton, 1,362—East Feliciana							
Clinton Infirmary	Gen	Corp	20	8	5	114	701
Columbia, 947—Caldwell							
Caldwell Hospital and Clinic	Gen	Indiv	18	6	6	137	570
Converse, 314—Sabine							
	Gen	Corp	15	10	6	90	840
C							
	N&M	Corp	30	23	..	...	256
C							
Acadia Hospital	Gen	Part	12	7	7	80	359
	Gen	NPAssn	50	13	10	298	935
	Gen	Part	21	11	12	277	1,107
De Quincy Hospital	Gen	Indiv	14	5	3	91	384
Douglas Clinic and Hospital	Gen	Indiv	12	2	4	225	745
De Ridder, 5,776—Beauregard							
	Gen	Church	24	...	12	Estab. 1950	
	Gen	Indiv	24	15	4	195	765
	Gen	Indiv	13	2	7	86	216
Ferriday Hospital	Gen	Part	28	8	5	200	1,000
Gonzales, 1,631—Ascension							
Gonzales Hospital	Gen	Indiv	6	...	2	56	76
Greenwell Springs, 130—East Baton Rouge							
Greenwell Springs Tuberculosis Hospital	TB	State	184	150	..	...	140
	Gen	Part	30	10	10	289	912
	Gen	Corp	25	9	8	83	733
Homer Memorial Hospital	Gen	Church	25	12	6	144	809
Houma, 11,480—Terrebonne							
Ellender Memorial Hospital	Gen	Part	23	20	8	962	2,633
Independence, 1,596—Tangipahoa							
Lallie Kemp Charity Hospital	Gen	State	92	61	17	1,214	3,895
Jackson, 6,767—East Feliciana							
East Louisiana State Hosp.	Ment	State	4,897	4,602	..	...	942
Parker Hospital▲	Unit of East Louisiana State Hospital						
Jena, 1,432—La Salle							
Jena Hospital	Gen	Indiv	20	6	5	140	540
Jonesville, 1,926—Catahoula							
Jonesville Clinic-Hospital	Gen	Indiv	10	3	2	54	322
Lafayette, 33,465—Lafayette							
Des Ormeaux Clinic-Hospital	Gen	Indiv	10	6	2	42	503
Lafayette Charity Hospital▲	Gen	State	334	167	66	2,393	8,452
Lafayette Sanitarium	Gen	Corp	25	12	8	271	1,340
Our Lady of Loudres Hospital	Gen	Church	50	20	10	328	1,585
St. Ann Infirmary	Gen	Indiv	14	8	10	139	903
Lake Charles, 41,202—Calcasieu							
	Gen	Church	135	78	34	1,617	7,390
War Memorial Hospital	Gen	NPAssn	45	22	6	179	1,460
	Gen	Indiv	12	5	6	75	453
	Gen	NPAssn	12	4	3	70	357
	Gen	Indiv	25	17	4	113	1,386
Many, 1,675—Sabine							
Fraser Sanitarium	Gen	Indiv	16	7	8	147	696
Marksville, 3,636—Avoyelles							
Marksville Hospital	Gen	Part	20	8	4	117	713
Minden, 9,776—Webster							
Minden Sanitarium	Gen	Corp	55	19	10	274	1,826
Monroe, 38,375—Ouachita							
E. A. Conway Memorial Hosp.	Gen	State	179	139	27	1,461	9,029
G. B. Cooley Sanatorium	TB	NPAssn	60	34	..	...	27
Monroe Charity Hospital	See E. A. Conway Memorial Hospital						
Riverside Sanitarium▲	Gen	Indiv	26	13	8	73	947
	Gen	Church	145	141	25	1,036	8,576
	Gen	NPAssn	32	25	4	221	1,845
Legion Memorial Hospital	Gen	NPAssn	33	7	8	103	517
New Iberia, 16,460—Iberia							
Dauterive Hospital	Gen	Part	26	14	6	375	1,570
Iberia General Hospital	Gen	Corp	15	5	6	155	606
New Orleans, 567,257—Orleans							
Charity Hospital of Louisiana★+▲◇	Gen	State	3,079	2,314	248	10,549	65,142
City Hospital for Mental Diseases	Ment	City	100	35	..	...	374

LOUISIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
De Paul Sanitarium+▲◇	N&M	Church	233	187	..	...	875
[illegible]▲	ENT	NPAssn	83	62	..	...	5,375
[illegible]▲	Gen	NPAssn	88	44	12	344	1,928
[illegible] Center	Gen	Indiv	11	...	5	Estab. 1950	
Hotel Dieu, Sisters' Hospital★+▲◇	Gen	Church	295	219	35	2,466	12,434
Illinois Central Hospital▲	Indus	NPAssn	60	33	..	...	783
John Dibert Memorial Tuberculosis Hospital	Unit of Charity Hospital						
Mercy Hospital-Soniat Memorial★▲◇	Gen	Church	125	84	32	1,126	5,049
Metairie Hospital	Gen	NPAssn	23	9	5	123	1,007
Montelepre Memorial Hospital	Gen	Indiv	30	17	6	178	979
Ochsner Foundation Hosp.+▲	Gen	NPAssn	216	143	..	...	5,374
Richard Milliken Memorial Hospital	Unit of Charity Hospital						
Sara Mayo Hospital▲	Gen	NPAssn	64	31	32	797	2,376
Southern Baptist Hosp.★+▲◇	Gen	Church	350	317	70	2,720	14,517
Touro Infirmary★+▲◇	Gen	NPAssn	482	344	48	2,270	15,053
U. S. Army Hospital	Gen	Army	25	16	..	...	750
U. S. Marine Hospital★+▲	Gen	USPHS	436	397	15	359	5,651
Veterans Admin. Hospital+▲	Gen	Vet	670	549	..	...	5,624
Oakdale, 5,560—Allen							
Hargrove Clinic and Hospital	Gen	Part	65	29	12	172	3,125
Oak Grove, 1,792—West Carroll							
Everett-Biggs Clinic-Hosp.	Gen	Part	17	10	7	158	802
Opelousas, 11,600—St. Landry							
St. Landry Clinic-Hospital	Gen	Corp	22	11	4	246	1,236
[illegible]							
[illegible]	Gen	Indiv	19	3	4	62	226
[illegible]							
Central Louisiana State Hospital	Ment	State	2,700	2,658	..	...	1,029
Fuqua Memorial Hospital▲	Unit of Central Louisiana State Hospital						
Huey P. Long Charity Hosp.▲	Gen	State	301	190	22	1,830	10,358
[illegible]							
[illegible]	Gen	NPAssn	35	19	9	300	1,239
[illegible]							
[illegible]	Gen	Indiv	17	11	5	88	745
Port Sulphur, 550—Plaquemines							
Port Sulphur Hospital	Gen	NPAssn	12	8	6	136	568
Rayville, 3,143—Richland							
Ball and Ellington Clinic-Hospital	Gen	Part	11	6	4	121	490
[illegible]	Gen	NPAssn	54	31	16	269	2,407
[illegible]	TB	State	132	115	..	...	196
[illegible]	Gen	Indiv	20	10	7	203	580
[illegible]	TB	Indiv	36	18	..	...	118
[illegible]	TB	Corp	57	40	..	...	135
[illegible]▲	Gen	Part	102	67	16	333	3,645
[illegible]▲	Gen	Corp	130	60	17	410	4,562
Physicians and Surgeons Hospital	Gen	Corp	78	65	..	...	3,966
Pines Sanatorium	Unit of Shreveport Charity Hospital						
T. E. Schumpert Memorial Sanitarium▲◇	Gen	Church	107	98	27	1,280	5,690
Shreveport Charity Hospital★+▲◇	GenTb	State	790	571	52	3,619	16,134
Shreveport Hospital and Research Center▲	Gen	NPAssn	120	100	20	779	5,390
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	55	.	...	171
U. S. Air Force Hospital▲	Gen	USAF	130	57	20	654	2,919
Veterans Admin. Hospital	Gen	Vet	450	...	..	Estab. 1950	
[illegible]							
[illegible]	Gen	NPAssn	35	13	8	364	1,411
[illegible]	Gen	Part	13	4	4	39	512
[illegible]	Gen	Part	72	60	7	267	3,154
[illegible]	Gen	Part	26	15	7	187	1,480
[illegible]	Gen	Indiv	18	11	4	275	1,039
[illegible]	Gen	Corp	27	15	6	117	1,191
[illegible] Clinic and Hospital	Gen	Indiv	12	9	4	134	560

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Alexandria, 34,685—Rapides							
State Colony and Training School	[illegible]	State	1,000	859	..	...	111
Baton Rou[illegible]							
Student [illegible]		State	100	13	..	...	1,385
Gueydan, 2,042—Vermilion							
Gueydan Memorial Hospital	Gen	NPAssn	10	4	3	59	416
Minden, 9,776—Webster							
Dr. J. A. Phillips Hospital	Gen	Indiv	22	14	4	75	1,209
Napoleonville, 1,232—Assumption							
Napoleonville Hospital	Gen	Indiv	9	3	4	109	344
New Orleans, 567,257—Orleans							
Methodist Home-Hospital	Mat	Church	60	53	6	60	96
New Orleans Convalescent Home	Conv	NPAssn	33	14	..	...	88

MAINE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]							
[illegible]▲	Gen	NPAssn	95	58	20	696	3,128
[illegible]	Ment	State	1,650	1,646	..	...	373
[illegible]							
Bangor Sanatorium	TB	NPAssn	30	20	..	...	38
Bangor State Hospital⊙	Ment	State	1,028	1,153	..	...	330
Eastern Maine General Hospital★+▲◇	Gen	NPAssn	292	233	30	1,376	8,445
St. Joseph Hospital	Gen	Church	28	25	..	...	1,308
Stinson Private Hospital	Gen	Indiv	26	16	12	206	725
Bar Harbor, 3,819—Hancock							
Mount Desert Island Hosp.▲	Gen	NPAssn	58	22	10	198	1,362
Bath, 10,594—Sagadahoc							
Bath Memorial Hospital▲	Gen	NPAssn	75	50	20	273	2,293
Belfast, 5,927—Waldo							
Bradbury Memorial Hospital	Gen	NPAssn	16	12	..	...	304
Waldo County General Hospital▲	Gen	NPAssn	40	23	10	202	805
Biddeford, 20,785—York							
Trull Hospital	Gen	Corp	45	35	10	347	1,558
Webber Hospital	Gen	NPAssn	55	47	15	393	2,582
Blue Hill, 1,323—Hancock							
Blue H[illegible]	Gen	NPAssn	25	8	6	73	312
Boothb[illegible]							
St. A[illegible]▲	Gen	Corp	26	15	4	91	574
Brunswick, 10,943—Cumberland							
Brunswick Hospital	Gen	Indiv	38	23	10	251	1,249
Camden, 3,691—Knox							
Camden Community Hospital	Gen	NPAssn	18	11	6	118	567
Caribou, 9,509—Aroostook							
Cary Memorial Hospital▲	Gen	City	40	27	16	397	1,515
Castine, 787—Hancock							
Castine Community Hospital	Gen	NPAssn	12	9	6	170	407
Damariscotta, 1,079—Lincoln							
Miles Memorial Hospital	Gen	NPAssn	25	11	7	147	785
Dexter, 4,016—Penobscot							
Plummer Memorial Hospital	Gen	NPAssn	20	13	7	...	654
Dover-Foxcroft, 4,199—Piscataquis							
Mayo Memorial Hospital	Gen	City	33	12	8	199	775
Eagle Lake, 1,513—Aroostook							
Northern Maine General Hosp.	Gen	Church	40	37	8	124	1,080
Ellsworth, 3,943—Hancock							
Eastern Memorial Hospital	Gen	NPAssn	13	6	6	144	386
Fairfield, 5,770—Somerset							
Central Maine Sanatorium▲	TB	State	201	173	..	...	200
Farmington, 4,660—Franklin							
Franklin County Memorial Hospital▲	Gen	NPAssn	49	22	15	427	1,410
Fort Fairfield, 5,783—Aroostook							
Fort Fairfield Clinic-Hospital	Gen	NPAssn	18	13	10	194	728
[illegible]							
[illegible]▲	Gen	NPAssn	54	25	16	361	1,288
[illegible]							
Charles A. Dean Memorial Hospital	Gen	NPAssn	22	8	4	96	583
Greenwood Mountain, 250—Oxford							
Western Maine Sanatorium+▲	TB	State	117	107	..	...	151
Hartland, 1,311—Somerset							
Scott-Webb Memorial Hospital	Gen	NPAssn	60	14	12	287	1,592
Houlton, 8,348—Aroostook							
Aroostook General Hospital	Gen	NPAssn	35	24	10	230	1,512
[illegible]	Gen	Church	50	41	12	263	1,641
[illegible]							
[illegible] Hospital★+▲◇	Gen	NPAssn	225	175	36	1,053	6,020
St. Mary's General Hosp.★▲◇	Gen	Church	155	120	25	1,119	4,348
Old Town, 8,256—Penobscot							
Home Private Hospital	Gen	Indiv	15	7	10	195	210
Portland, 76,936—Cumberland							
Maine Eye and Ear Infirmary▲◇	Gen	NPAssn	123	91	30	811	4,319
Maine General Hospital★+▲◇	Gen	NPAssn	343	272	62	1,144	9,841
Mercy Hospital▲◇	Gen	Church	156	123	30	951	4,978
Portland City Hospital	GenInst	City	131	125	12	133	1,077
U. S. Marine Hospital▲	Gen	USPHS	80	57	..	...	922
Presque Isle, 9,945—Aroostook							
Northern Maine Sanatorium	TB	State	120	96	..	...	130
Presque Isle General Hosp.▲	Gen	NPAssn	55	38	10	428	1,884
Rockland, 9,138—Knox							
Knox County General Hosp.▲	Gen	NPAssn	65	31	12	300	1,898
Rumford, 9,915—Oxford							
Rumford Community Hosp.▲◇	Gen	NPAssn	62	52	16	630	2,517
Sanford, 15,149—York							
Henrietta D. Goodall Hosp.▲	Gen	NPAssn	54	42	16	419	1,823
Skowhegan, 7,403—Somerset							
Redington Memorial Hospital	Gen	NPAssn	25	21	8	204	1,163
Togus, 2,350—Kennebec							
Veterans Admin. Center▲	Ment	Vet	869	784	..	...	2,959
Van Buren, 5,078—Aroostook							
Hotel Dieu Hospital	Gen	Church	15	10	7	218	633
Waterville, 18,232—Kennebec							
Sisters' Hospital▲◇	Gen	Church	102	77	18	686	3,935
Thayer Hospital▲	Gen	NPAssn	38	33	5	192	1,876

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Bangor, 31,473—Penobscot							
Gay Private Hospital	N&M	Corp	18	15	..	...	410
Pownal, 751—Cumberland							
Pownal State School	MeDe	State	1,500	1,157	..	...	164
Yarmouth, 2,658—Cumberland							
Gilbert Maternity and Convalescent Home	Mat	Indiv	17	14	6	2	15
York Village, 3,205—York							
York Hospital	Gen	NPAssn	22	12	6	110	573

Key to symbols and abbreviations is on page 124

MARYLAND

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible] ford							
[illegible]	Gen	Army	100	56	15	402	2,414
[illegible]							
Anne Arundel General Hosp.▲	Gen	NPAssn	70	58	15	597	3,140
U. S. Naval Hospital▲	Gen	Navy	242	99	19	361	2,808
Baltimore, 940,205—Baltimore City							
Baltimore City Hosps. ★+▲⊙	GenTB	City	1,944	1,395	80	2,612	7,251
Baltimore City Tuberculosis Hospital	Unit of Baltimore City Hospitals						
Baltimore Eye, Ear and Throat Hospital+▲	ENT	NPAssn	66	42	..	...	3,719
Beck Diagnostic Clinic-Hosp.	Gen	Indiv	14	9	..	...	200
Bon Secours Hospital★+▲◇	Gen	Church	170	132	35	1,266	5,328
Children's Hospital School+▲	Orth	NPAssn	120	93	.	...	558
Church Home and Hosp.★+▲◇	Gen	Church	173	123	28	1,005	5,468
Franklin Square Hosp.★+▲◇	Gen	NPAssn	200	101	32	735	4,132
Hospital for Women★+▲◇	Gen	NPAssn	141	99	40	1,823	5,092
James Lawrence Kernan Hospital and Industrial School for Crippled Children+▲	Orth	NPAssn	85	70	..	..	282
Jenkin's Memorial Hospital	Chr	NPAssn	92	92	..	..	31
Johns Hopkins Hospital★+▲◇	Gen	NPAssn	983	754	67	2,470	19,561
Johnston Memorial Children's Hospital	Unit of Union Memorial Hospital						
Lutheran Hospital★+▲◇	Gen	NPAssn	187	165	35	1,757	6,337
Maryland General Hosp.★+▲◇	Gen	Church	229	182	26	1,055	6,213
Mercy Hospital★+▲◇	Gen	Church	293	249	57	1,666	9,180
Presbyterian Eye, Ear, Nose and Throat Hospital	ENT	Church	40	5	..	...	1,312
Provident Hospital and Free Dispensary★+▲◇	Gen	NPAssn	130	96	32	1,269	3,293
St. Agnes Hospital★+▲◇	Gen	Church	216	171	37	1,115	7,110
St. Joseph's Hospital★+▲◇	Gen	Church	250	185	37	1,220	6,980
Seton Institute+○	N&M	Church	310	264	.	.	396
Sinai Hospital★+▲◇	Gen	NPAssn	313	269	65	2,408	10,300
South Baltimore General Hospital★+▲	Gen	NPAssn	152	116	23	799	4,724
Union Memorial Hosp.★+▲◇	Gen	NPAssn	335	245	36	1,440	8,688
U. S. Marine Hospital★+▲	Gen	USPHS	400	363	..	...	6,561
University Hospital★+▲◇	Gen	State	435	391	70	2,785	11,081
Bethesda, 30,000—Montgomery							
Suburban Hospital+▲	Gen	NPAssn	100	73	26	1,003	4,456
U. S. Naval Hospital★+▲	Gen	Navy	1,300	936	40	1,695	14,401
[illegible]							
[illegible]▲	Gen	NPAssn	78	30	18	347	1,720
[illegible]	Ment	State	535	514	..	...	183
[illegible]	Chr	State	224	179	..	...	160
Haarlem Lodge	N&M	Corp	52	26	..	...	108
Spring Grove State Hosp.+	Ment	State	2,436	2,360	..	...	553
Chestertown, 3,135—Kent							
Kent and Upper Queen Anne's General Hospital	Gen	NPAssn	30	18	12	222	793
Cheverly (Hyattsville P. O.), 3,298—Prince Georges							
Prince Georges' General Hospital▲	Gen	County	102	100	18	939	5,708
Crisfield, 3,699—Somerset							
Edward W. McCready Memorial Hospital	Gen	NPAssn	34	23	14	139	653
Crownsville, 30—Anne Arundel							
Crownsville State Hospital	Ment	State	1,915	1,935	..	...	590
Hospital for Colored Feeble-minded Children	Unit of Crownsville State Hospital						
Cumberland, 37,632—Allegany							
Allegany Hospital of the Sisters of Charity▲◇	Gen	Church	134	96	16	488	4,220
Memorial Hospital+▲◇	Gen	CyCo	218	184	50	1,290	7,536
Easton, 4,839—Talbot							
Memorial Hospital▲◇	Gen	NPAssn	108	78	20	640	3,742
Elkton, 5,254—Cecil							
Union Hospital of Cecil County	Gen	NPAssn	75	40	25	429	2,214
Fort George G. Meade,—Anne Arundel							
U. S. Army Hospital▲	Gen	Army	200	210	13	587	5,202
Fort Howard, 1,200—Baltimore							
Veterans Admin. Hospital+▲	Gen	Vet	491	417	..	...	4,253
Frederick, 18,092—Frederick							
Emergency Hospital	Gen	County	42	27	16	268	433
Frederick Memorial Hosp.▲◇	Gen	NPAssn	125	84	24	979	4,139
Frostburg, 6,867—Allegany							
Miners Hospital	Gen	State	51	29	14	379	1,666
Glenn Dale, 205—Prince Georges							
Tuberculosis Sanatorium	See Washington, D. C.						
Hagerstown, 36,232—Washington							
Children's Hospital	Chil	NPAssn	14	5	..	...	65
Washington County Hosp.★▲◇	Gen	NPAssn	158	140	48	1,396	6,569
Havre de Grace, 7,811—Harford							
Harford Memorial Hospital▲	Gen	NPAssn	68	60	26	811	3,568
Henryton, 30—Carroll							
Henryton State Hospital	TB	State	391	353	..	...	257
Ijamsville, 200—Frederick							
Riggs Cottage Sanitarium	N&M	Indiv	26	18	..	...	49
La Plata, 488—Charles							
Physicians Memorial Hosp.	Gen	NPAssn	34	18	16	267	1,100
Laurel, 4,469—Prince Georges							
District Training School	See Washington, D. C.						
Laurel Sanitarium	N&M	Indiv	80	75	..	...	289
Warren Hospital	Gen	Part	16	10	8	92	487
Leonardtown, 1,012—St. Marys							
St. Mary's Hospital	Gen	NPAssn	45	25	14	357	1,359
Mount Wilson, 225—Baltimore							
Mount Wilson State Hospital	TB	State	200	161	..	...	128

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Oakland, 1,632—Garrett							
Garrett County Memorial Hospital	Gen	County	35	...	10	Estab. 19	
Olney, 100—Montgomery							
Montgomery County General Hospital	Gen	NPAssn	58	35	16	439	1,71
P[illegible]							
[illegible] Infirmary	Gen	Navy	90	44	18	373	2,47
Perry Point, 80—Cecil							
Veterans Admin. Hospital+▲	Ment	Vet	1,830	1,868	..	...	3,6
Prince Frederick, 300—Calvert							
Calvert County Hospital	Gen	NPAssn	32	17	9	215	9
Reisterstown, 2,000—Baltimore							
Mount Pleasant	TB	NPAssn	60	54	..	...	
Riverdale, 5,501—Prince Georges							
Eugene Leland Memorial Hospital	Gen	Corp	57	38	12	353	2,0
Rockville, 6,948—Montgomery							
Chestnut Lodge Sanitarium+▲⊙	N&M	Indiv	80	63	..	...	1
Salisbury, 15,109—Wicomico							
Deer's Head State Hospital	Chr	State	284	...	..	Estab. 19	
Peninsula General Hosp.★▲◇	Gen	NPAssn	200	146	30	1,358	7,4
Pine Bluff State Hospital	TB	State	59	56	..	...	
Silver Spring, 28,000—Montgomery							
Cedarcroft Sanitarium	N&M	Part	50	30	..	...	5
State Sanatorium, 200—Frederick							
Victor Cullen State Hospital	TB	State	350	309	..	...	1
Sykesville, 806—Carroll							
[illegible]	Ment	State	3,100	3,065	..	...	5
T[illegible]							
[illegible]	See Washington, D. C.						
[illegible] Hospital	See Washington, D. C.						
Towson, 2,074—Baltimore							
Hospital for Consumptives (Eudowood Sanatorium)	TB	NPAssn	180	166	..	...	2
Sheppard and Enoch Pratt Hospital+▲⊙	N&M	NPAssn	285	199	..	...	2
Western Port, 3,441—Allegany							
Reeves Clinic-Hospital	Gen	Part	9	1	..	...	2

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Baltimore, 940,205—Baltimore City							
Baltimore City Jail Hospital	Inst	City	24	3	..	...	4
Happy Hills Convalescent Home for Children	Conv	NPAssn	79	61	..	...	1
Home for Incurables	Incur	NPAssn	167	149	..	...	
Levindale, Hebrew Home and Infirmary	Inst	NPAssn	180	178	..	...	
Maryland Penitentiary Hosp.	Inst	State	50	23	..	...	5
Ellicott City, 1,216—Howard							
Pinel Clinic-Hospital	N&M	Corp	60	40	..	...	1
Jessups, 400—Anne Arundel							
Maryland House of Correction Hospital	Inst	State	22	8	..	...	3
Owings Mills, 130—Baltimore							
Rosewood State Training School	MeDe	State	1,276	1,260	..	...	13
Rockville, 6,948—Montgomery							
Christ Child Farm for Convalescent Children	Conv	NPAssn	31	27	..	...	14

MASSACHUSETTS

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Acushnet (New Bedford P. O.), 4,402—Bristol							
Acushnet Hospital	Gen	NPAssn	47	30	17	634	1,74
Adams, 12,027—Berkshire							
W. B. Plunkett Memorial Hospital▲	Gen	City	50	22	15	283	1,21
Amesbury, 10,810—Essex							
Amesbury Hospital▲	Gen	City	35	28	10	262	1,130
Arlington, 43,984—Middlesex							
[illegible]	N&M	Corp	60	45	..	...	59
[illegible]▲	Gen	NPAssn	96	47	27	371	2,777
[illegible]							
Athol Memorial Hospital	Gen	NPAssn	46	...	16	Estab. 1950	
Attleboro, 23,665—Bristol							
Bristol County Tuberculosis Hospital	TB	County	60	52	..	...	120
[illegible]▲	Gen	NPAssn	125	98	44	1,037	4,245
[illegible]							
Community Memorial Hosp.▲	Gen	NPAssn	24	17	10	186	783
Bedford, 5,216—Middlesex							
Veterans Admin. Hospital+▲⊙	Ment	Vet	1,827	1,842	..	...	343
Beverly, 28,855—Essex							
Beverly Hospital★+▲◇	Gen	NPAssn	166	133	41	935	5,195
Boston, 790,863—Suffolk							
[illegible]	Nerv	NPAssn	35	31	..	...	111
[illegible]▲	Gen	NPAssn	363	217	91	873	6,863
Boston City Hospital★+▲◇	Gen	City	2,376	1,856	159	2,991	36,307
Boston Floating Hospital+▲⊙	Chil	NPAssn	56	41	..	...	1,705
Boston Lying-In Hospital+▲○	Mat	NPAssn	225	153	216	5,067	7,891
Boston Psychopathic Hospital+▲⊙	Ment	State	122	111	..	...	1,054
Boston Sanatorium+	TB	City	578	492	..	...	554
Boston State Hospital+▲⊙	Ment	State	3,127	2,984	..	...	1,424
Carney Hospital★+▲◇	Gen	Church	228	164	34	841	6,133
Channing Home	TB	NPAssn	29	27	..	...	30
Children's Hospital	Unit of Children's Medical Center						

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Children's Medical Center★+▲◇	Chil	NPAssn	517	320	..	...	10,375
Faulkner Hospital★+▲◇	Gen	NPAssn	144	106	25	784	4,045
Glenside Hospital	N&M	Corp	132	118	..	...	93
[illegible]	Gen	NPAssn	31	22	..	...	808
[illegible]	Gen	Corp	55	36	22	810	2,481
[illegible]	Unit of Massachusetts Memorial Hospitals						
[illegible]	Unit of Children's Medical Center						
[illegible]	Maintained by Massachusetts General Hospital						
Infants' Hospital	Unit of Children's Medical Center						
Jewish Memorial Hospital▲	GenChr	NPAssn	122	120	..	...	190
Joseph H. Pratt Diagnostic Hospital	See New England Center Hospital						
[illegible]		City	506	492	..	...	972
[illegible]		NPAssn	191	119	..	...	6,145
Massachusetts General Hospital★+▲◇	Gen	NPAssn	452	340	..	...	7,370
Massachusetts General Hospital, Baker Memorial▲	Gen	NPAssn	277	248	30	212	7,190
Massachusetts General Hospital, Phillips House▲	Gen	NPAssn	94	79	15	83	2,494
Massachusetts Memorial Hospitals★+▲◇	Gen	NPAssn	360	256	45	1,019	7,463
Massachusetts Women's Hospital▲	Gen	NPAssn	63	48	22	228	2,191
New England Baptist Hosp.▲◇	Gen	NPAssn	227	196	..	...	5,821
[illegible]★+▲	Gen	NPAssn	170	120	..	...	5,382
[illegible]▲	Gen	Church	300	269	..	...	8,249
[illegible]▲	Gen	NPAssn	193	126	75	1,622	4,129
[illegible]	Unit of New England Deaconess Hospital						
Peter Bent Brigham Hospital★+▲◇	Gen	NPAssn	250	200	..	...	5,009
Robert Breck Brigham Hosp.▲	Gen	NPAssn	103	67	..	...	817
Robert Dawson Evans Memorial+	Unit of Massachusetts Memorial Hospitals						
St. Elizabeth's Hospital★+▲◇	Gen	Church	400	219	90	1,999	8,798
St. Margaret's Hospital▲◇	Gen	Church	121	96	60	1,986	3,820
[illegible]	Mat	Church	16	8	12	159	175
[illegible]▲	Gen	USPHS	340	241	..	...	3,920
Veterans Admin. Hospital+▲	Gen	Vet	382	320	..	...	5,063
Wolfson Nose and Throat Hospital	ENT	Indiv	9	1	..	...	340
Bourne, 5,786—Barnstable							
Barnstable County Sanat.▲	TB	County	70	62	..	...	296
Bridgewater, 9,513—Plymouth							
Bridgewater State Hospital	See State Farm, Massachusetts						
Brockton, 62,856—Plymouth							
Brockton Hospital★▲◇	Gen	NPAssn	120	112	23	923	4,277
Goddard Hospital▲	Gen	Corp	65	51	15	538	2,853
Moore Hospital	Gen	Indiv	23	15	8	232	706
[illegible]▲	Gen	NPAssn	50	43	20	333	1,881
[illegible]	Gen	NPAssn	32	24	10	371	1,574
[illegible]▲	Mat	Church	64	47	25	898	2,371
[illegible]	N&M	Indiv	69	53	..	...	901
[illegible]▲	Gen	NPAssn	50	38	..	...	1,239
[illegible]▲	Gyn	NPAssn	91	67	..	...	3,063
[illegible]▲	TB	City	30	17	..	...	33
[illegible]	Unit of Free Hospital for Women						
[illegible]▲	Gen	City	270	180	100	1,303	6,085
[illegible]▲	TB	City	100	88	..	...	294
[illegible]	Gen	Corp	35	21	12	304	1,200
[illegible] Incurables▲	Incur	Church	260	254	..	...	253
[illegible]▲	Gen	NPAssn	222	186	44	1,615	6,968
[illegible]	Gen	Church	64	39	20	189	1,507
Massachusetts Hosp. School+	Orth	State	185	109	..	...	51
Chelsea, 39,038—Suffolk							
Captain John Adams Hosp.▲	Gen	State	200	190	..	...	1,622
Chelsea Memorial Hospital▲◇	Gen	NPAssn	98	65	25	872	2,875
Lawrence F. Quigley Memorial Hospital	Gen	State	300	145	..	...	1,422
[illegible]▲	Gen	Navy	775	609	30	913	7,315
[illegible]▲	Gen	USAF	318	71	7	...	2,162
[illegible] Hospital	Gen	NPAssn	63	43	20	379	1,818
[illegible]▲	Gen	NPAssn	37	32	18	455	1,697
[illegible]	See Hathorne						
[illegible]	Gen	City	16	9	6	61	880
[illegible]	Gen	NPAssn	114	87	20	991	3,807
[illegible]—Bristol							
Fall River General Hospital▲	GenTb	City	269	157	..	...	1,653
St. Anne's Hospital+▲◇	Gen	Church	100	86	32	1,067	3,974
Truesdale Hospital★+▲◇	Gen	NPAssn	169	137	30	697	4,617
Union Hospital★▲◇	Gen	NPAssn	170	126	42	885	5,366
[illegible]	Gen	Army	165	...		Reopened	1950
[illegible]▲	Gen	City	250	200	37	1,069	5,706
Lucy Helen Memorial Hospital	Unit of Burbank Hospital						
Fort Devens,—Middlesex							
U. S. Army Hospital	Gen	Army	250	...		Reopened	1950
[illegible]▲	Ment	State	1,297	1,208	..	...	369
[illegible] Union Hosp.★▲◇	Gen	NPAssn	98	77	30	855	5,113

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Veterans Admin. Hospital+▲	Gen	Vet	1,100	814	..	...	7,335
Gardner, 19,617—Worcester							
Gardner State Hospital▲	Ment	State	1,425	1,394	..	...	176
Henry Heywood Memorial Hospital▲◇	Gen	NPAssn	107	82	20	841	4,214
Georgetown, 2,398—Essex							
Baldpate	N&M	Corp	43	34	..	...	193
Gloucester, 25,048—Essex							
Addison Gilbert Hospital▲	Gen	NPAssn	85	60	15	556	2,727
Great Barrington, 6,598—Berkshire							
Fairview Hospital▲	Gen	NPAssn	60	34	14	312	1,302
[illegible]							
[illegible] Hospital▲◇	Gen	NPAssn	102	80	25	726	3,264
Hanson, 3,248—Plymouth							
Plymouth County Hospital▲	TB	County	130	80	..	...	61
Hathorne, 146—Essex							
Danvers State Hospital+▲⊙	Ment	State	2,579	2,492	..	...	865
Haverhill, 47,213—Essex							
Benson Hospital	Gen	Corp	26	13	4	67	454
Haverhill Municipal Hospital (Hale)▲	Gen	City	161	113	30	904	5,907
Haydenville, 1,000—Hampshire							
Hampshire County Sanatorium	See Northampton						
Holden, 5,970—Worcester							
Holden District Hospital▲	Gen	NPAssn	29	22	6	206	1,101
[illegible]▲	Gen	NPAssn	140	108	27	609	3,973
[illegible]▲	Gen	Church	170	136	35	1,293	5,311
Hudson Hospital	Gen	NPAssn	20	15	6	116	758
Hyannis, 1,800—Barnstable							
Cape Cod Hospital▲	Gen	NPAssn	65	59	15	601	2,540
Ipswich, 6,877—Essex							
Benjamin Stickney Cable Memorial Hospital▲	Gen	NPAssn	25	16	7	207	778
Lawrence, 80,427—Essex							
Bessie Burke Memorial Hospital	Gen	City	99	80	5	75	1,210
Clover Hill Hospital	Gen	Corp	50	36	22	711	2,348
Lawrence General Hosp.★+▲◇	Gen	NPAssn	189	144	48	1,402	6,309
Leominster, 24,084—Worcester							
Leominster Hospital▲◇	Gen	NPAssn	102	78	23	571	3,179
Lowell, 96,523—Middlesex							
Lowell General Hospital★▲◇	Gen	NPAssn	183	135	30	818	5,337
St. John's Hospital★▲◇	Gen	Church	194	148	30	851	5,770
St. Joseph's Hospital★▲◇	Gen	Church	182	124	31	1,013	5,272
Shaw Hospital	Gen	Indiv	20	12	12	295	687
Ludlow, 8,629—Hampden							
Ludlow Hospital▲	Gen	NPAssn	33	21	14	398	1,698
Lynn, 99,521—Essex							
Lynn Hospital★+▲◇	Gen	NPAssn	248	196	55	1,616	8,030
Union Hospital	Gen	NPAssn	54	44	14	551	2,488
Malden, 59,779—Middlesex							
Malden Hospital+▲◇	Gen	NPAssn	200	146	36	1,122	6,226
Marblehead, 13,711—Essex							
Mary A. Alley Emergency Hospital	Gen	City	18	10	10	90	407
[illegible]▲	Gen	NPAssn	61	46	15	488	1,950
[illegible]							
Medfield State Hospital+▲	Ment	State	1,769	1,650	..	...	341
Medford, 66,109—Middlesex							
Lawrence Memorial Hosp.▲◇	Gen	NPAssn	76	60	34	978	2,856
Melrose, 26,919—Middlesex							
Melrose Hospital▲◇	Gen	NPAssn	118	80	29	814	3,861
New England Sanitarium and Hospital▲◇	Gen	Church	145	125	19	625	3,782
Methuen, 24,411—Essex							
Bon Secours Hospital	Gen	Church	120	...	32	Estab.	1950
Mary E. McGowan Memorial Hospital	Gen	Corp	32	25	12	457	1,299
[illegible]▲	TB	State	276	142	..	...	128
[illegible]▲	Gen	NPAssn	32	26	15	255	968
[illegible] Hospital▲	TB	County	360	244	..	...	247
Milford, 15,405—Worcester							
Milford Hospital▲◇	Gen	NPAssn	61	44	15	715	2,671
Milton, 22,395—Norfolk							
Milton Hospital and Convalescent Home▲	Gen	NPAssn	56	...	12	84	...
Montague City, 7,793—Franklin							
Farren Memorial Hospital▲	Gen	Church	74	59	8	290	3,110
Nantucket, 3,417—Nantucket							
Nantucket Cottage Hospital	Gen	NPAssn	33	17	5	75	623
Natick, 19,663—Middlesex							
Leonard Morse Hospital▲	Gen	NPAssn	58	39	17	532	1,973
[illegible]	Gen	City	68	29	16	166	1,141
[illegible]▲	Gen	NPAssn	298	203	45	1,959	10,161
Sassaquin Sanatorium▲	TB	NPAssn	104	52	..	...	91
Sol-e-Mar Orthopedic Hospital for Children▲	Orth	NPAssn	40	26	..	...	52
Union Hospital	Gen	Corp	36	25	..	...	1,060
Newburyport, 14,073—Essex							
Anna Jaques Hospital▲	Gen	NPAssn	53	38	10	259	1,724
[illegible]▲	Gen	NPAssn	20	10	5	129	487
[illegible]▲	Orth	NPAssn	90	66	..	...	24

Key to symbols and abbreviations is on page 124

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Newton Lower Falls,—Middlesex							
Newton-Wellesley Hosp.★+▲◇	Gen	NPAssn	220	165	55	1,363	6,358
Norfolk, 2,688—Norfolk							
State Prison Colony Hosp.▲	Inst	State	75	41	..	...	736
North Adams, 21,475—Berkshire							
North Adams Hospital▲	Gen	NPAssn	72	60	19	516	2,524
Northampton, 28,998—Hampshire							
Cooley Dickinson Hosp.+▲◇	Gen	NPAssn	165	135	25	1,160	6,030
Hampshire County Sanatorium	TB	County	60	59	..	...	110
Northampton State Hosp.+▲⊙	Ment	State	1,788	2,279	..	...	806
Veterans Admin. Hospital▲	Ment	Vet	1,105	1,099	..	...	287
North Grafton, 1,150—Worcester							
Grafton State Hospital▲	Ment	State	1,861	1,771	..	...	359
N [illegible] llesex							
[illegible]▲	TB	State	240	149	..	...	151
N [illegible]							
[illegible]	Gen	NPAssn	137	112	30	983	4,780
Oak Bluffs, 1,506—Dukes							
Martha's Vineyard Hospital▲	Gen	NPAssn	33	18	10	120	669
Palmer, 9,524—Hampden							
Monson State Hospital▲	Epil	State	1,639	1,469		.	101
Wing Memorial Hospital▲	Gen	NPAssn	29	25	10	247	2,293
Peabody, 22,647—Essex							
Josiah B. Thomas Hospital	Gen	City	70	55	15	260	1,864
P [illegible]							
[illegible]	Gen	NPAssn	45	34	10	288	1,432
[illegible]▲	*Gen*	*NPAssn*	*197*	*129*	*31*	*700*	*4,930*
St. Luke's Hospital★▲◇	Gen	Church	150	114	38	852	4,426
Plymouth, 13,652—Plymouth							
Jordan Hospital▲	Gen	NPAssn	68	56	15	357	2,682
Quincy, 83,190—Norfolk							
Quincy City Hospital★+▲◇	Gen	City	275	211	60	1,634	10,444
Rutland, 3,041—Worcester							
[illegible]▲	TB	State	330	231	..	..	235
[illegible]▲	TB	Vet	618	537		...	613
Salem, 41,842—Essex							
North Shore Babies' Hosp.▲	Chil	NPAssn	35	15	13	..	560
Salem Hospital★+▲◇	Gen	NPAssn	237	203	52	1,352	7,338
Somerville, 102,254—Middlesex							
Somerville Hospital◇	Gen	NPAssn	120	81	30	819	3,916
[illegible]							
[illegible]	N&M	Church	37	28	..	...	325
[illegible]▲	TB	County	154	142	..	...	96
[illegible]▲	Gen	NPAssn	56	32	18	450	1,811
Health Department Hospital	TbIso	City	100	48	4	..	360
Mercy Hospital★▲◇	Gen	Church	340	263	60	2,203	10,822
Shriners Hospital for Crippled Children+▲⊙	Orth	NPAssn	60	53		.	263
[illegible]★+▲◇	Gen	NPAssn	281	255	4	6	8,023
[illegible]▲	Mat	NPAssn	65	56	75	2,598	2,875
[illegible]▲	Gen	NPAssn	130	107	..	...	4,613
State Farm, 200—Plymouth							
Bridgewater State Hospital	Ment	State	1,099	...	..	...	..
S [illegible]							
[illegible]▲	N&M	NPAssn	41	36	..	...	139
[illegible]							
Morton Hospital▲◇	Gen	NPAssn	90	61	44	779	3,216
Taunton State Hospital+▲⊙	Ment	State	1,510	2,016	..	...	703
Tewksbury, 7,375—Middlesex							
Tewksbury State Hospital and Infirmary▲	GenChr	State	2,675	1,916	40	97	1,568
Vineyard Haven, 1,500—Dukes							
U. S. Marine Hospital	Gen	USPHS	30	20	..	...	293
Walpole, 8,865—Norfolk							
[illegible]▲	Cancer	State	70	55	..	...	916
W [illegible]							
[illegible]▲	Ment	State	1,622	2,003	..	...	787
[illegible]▲	TB	County	380	329	..	.	321
Murphy Army Hospital▲	Gen	Army	715	...	15	Reopened	
Waltham Hospital★▲	Gen	NPAssn	174	104	37	1,020	4,739
Ware, 7,495—Hampshire							
Mary Lane Hospital▲	Gen	NPAssn	60	38	20	455	1,910
Wareham, 7,863—Plymouth							
Tobey Hospital▲	Gen	NPAssn	40	31	16	562	1,697
Waverley, 6,000—Middlesex							
McLean Hospital+▲◇	N&M	NPAssn	232	190	..	...	280
Webster, 13,215—Worcester							
Webster District Hospital▲	Gen	NPAssn	33	21	14	340	1,249
Wellesley, 20,847—Norfolk							
Channing Sanitarium	N&M	Corp	30	24	..	...	22
Westboro, 7,266—Worcester							
Westboro State Hospital▲	Ment	State	1,760	1,657	..	...	583
Westfield, 20,961—Hampden							
Noble Hospital▲	Gen	Corp	75	42	18	528	3,432
Westfield State Sanatorium+▲	TbCancer	State	191	152	..	...	603
Westwood, 5,838—Norfolk							
Westwood Lodge	N&M	Corp	21	17	..	...	273
Weymouth, 32,695—Norfolk							
South Shore Hospital▲	Gen	NPAssn	117	98	40	1,486	4,782
Whitinsville, 7,000—Worcester							
Whitinsville Hospital	Gen	NPAssn	18	13	8	280	616
Winchendon, 6,477—Worcester							
Winchendon Hospital	Gen	NPAssn	30	25	10	158	1,187
Winchester, 15,567—Middlesex							
Winchester Hospital▲	Gen	NPAssn	81	62	30	1,004	2,763
Winthrop, 19,494—Suffolk							
Winthrop Community Hosp▲	Gen	NPAssn	65	43	27	699	2,089
Woburn, 20,269—Middlesex							
Charles Choate Memorial Hospital▲	Gen	NPAssn	51	40	18	494	1,788

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Worcester, 201,885—Worcester							
Belmont Hospital+▲⊙	TbIso	City	250	111	..	...	553
[illegible]▲	Gen	NPAssn	55	36	16	458	1,599
[illegible]	Gen	Corp	25	9	5	45	311
[illegible]▲	Gen	NPAssn	269	185	30	1,082	9,552
St. Vincent Hospital★+▲◇	Gen	Church	240	240	35	891	7,571
Worcester City Hospital★+▲◇	Gen	City	480	375	60	1,733	10,531
Worcester County Sanat.▲	TB	County	128	106	..	..	52
Worcester Hahnemann Hospital▲◇	Gen	NPAssn	118	84	45	1,143	4,621
Worcester State Hospital+▲⊙	Ment	State	2,899	2,822	8	16	311

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Belchertown, 3,486—Hampshire							
Belchertown State School▲	MeDe	State	1,323	1,214	..	...	203
Boston, 790,863—Suffolk							
Bay State Hospital	Gen	NPAssn	30	19	5	251	1,357
Boston Home for Incurables	Incur	NPAssn	45	45	..	...	5
Florence Crittenton Maternity Home and Hospital▲	Mat	NPAssn	52	33	47	...	135
[illegible]	TB	NPAssn	110	39	..	...	200
[illegible]	Drug	NPAssn	45	31	..	...	634
[illegible]	N&M	Corp	62	37	..	...	291
Woodside Cottages	*N&M*	*Corp*	*20*	*18*	..	...	*27*
Greenfield, 17,237—Franklin							
[illegible]	Iso	City	20	1	..	...	67
[illegible]	Chr	City	80	76	..	...	110
Lynn Health Department Hospital	IsoTb	City	50	5	..	...	110
Pittsfield, 53,055—Berkshire							
Pittsfield Anti-Tuberculosis Hospital	TB	NPAssn	12	10	..	...	12
Salem, 41,842—Essex							
Health Department Hospital for Communicable Diseases	Iso	City	16	1	..	...	41
Springfield, 162,601—Hampden							
Buscall Nursing Home	Conv	Indiv	25	12	..	...	7
Springfield Municipal Hospital	Chr	City	132	132	..	...	33
Waltham, 47,199—Middlesex							
Walter E. Fernald State School▲	MeDe	State	1,540	1,856	..	...	135
[illegible]	Inst	NPAssn	29	16	..	...	911
Hospital and Convalescent Home for Children	Unit of Children's Medical Center, Boston						
West Concord, 3,500—Middlesex							
Massachusetts Reformatory Hospital	Inst	State	50	5	..	...	635
W [illegible] hire							
[illegible]y.	Inst	NPAssn	19	3	..	...	200
Wrentham State School	MeDe	State	1,811	1,920	..	...	204

MICHIGAN

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Adrian, 18,402—Lenawee							
Emma L. Bixby Hospital▲	Gen	City	70	48	24	1,067	3,692
Albion, 10,395—Calhoun							
James W. Sheldon Memorial Hospital▲	Gen	City	49	33	14	452	1,792
Allegan, 4,777—Allegan							
Allegan Health Center▲	Gen	NPAssn	40	30	13	451	1,690
Alma, 8,327—Gratiot							
Michigan Masonic Home and Hospital	Inst	NPAssn	100	87	..	...	227
[illegible]	Gen	NPAssn	29	23	15	521	1,775
[illegible]	Gen	Part	37	18	10	226	1,029
Almont, 1,028—Lapeer							
Bishop Hospital	Gen	Indiv	14	9	5	191	500
Alpena, 13,053—Alpena							
Alpena General Hospital	Gen	City	85	78	21	912	4,293
Ann Arbor, 47,279—Washtenaw							
Mercywood Neuropsychiatric Hospital⊙	N&M	Church	50	47	..	...	703
[illegible] Institute	Unit of University Hospital						
[illegible]▲	Gen	Church	240	198	64	1,391	8,756
[illegible]	Inst	Gen	60	24	..	...	2,517
[illegible]▲	Gen	State	1,041	836	82	1,017	16,900
Bad Axe, 2,905—Huron							
Hubbard Memorial Hospital	Gen	NPAssn	48	21	12	449	1,239
Battle Creek, 48,469—Calhoun							
[illegible]▲	TB	NPAssn	275	230	..	...	235
[illegible]	TB	County	73	67	..	...	82
[illegible]▲	Gen	NPAssn	307	147	..	..	3,237
[illegible]▲	Gen	NPAssn	100	72	25	1,312	5,335
[illegible] Hospital★+▲◇	*Gen*	*Church*	*175*	*111*	*25*	*762*	*7,405*
Percy Jones Army Hospital▲	Gen	Army	1,600	...	10	Reopened	
Bay City, 52,372—Bay							
Bay City General Hospital▲	Gen	City	154	122	33	1,218	7,212
Bay City Samaritan Hospital	Gen	NPAssn	45	29	3	10	1,331
Mercy Hospital▲◇	Gen	Church	238	171	39	1,065	8,160
Benton Harbor, 18,612—Berrien							
Mercy Hospital▲◇	Gen	NPAssn	100	86	26	1,216	4,537
Berrien Center, 241—Berrien							
Berrien County Hospital	Gen	County	60	38	5	83	507

Key to symbols and abbreviations is on page 124

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Big Rapids, [illegible]—Mecosta							
[illegible]	Gen	City	40	25	12	315	1,225
[illegible]	Inst	NPAssn	20	2	..	...	52
[illegible]	Gen	NPAssn	13	8	6	54	310
[illegible]	Gen	Church	125	59	25	611	3,410
Calumet, 1,222—Houghton							
Calumet and Hecla Hospital...	Indus	NPAssn	24	12	..	.	466
Caro, 3,454—Tuscola							
Caro Community Hospital....	Gen	City	16	10	9	235	842
Caro State Hospital for Epileptics....	Epil	State	1,576	1,386	.	.	95
Cass City, 1,759—Tuscola							
Pleasant Home Hospital.......	Gen	Indiv	15	12	4	148	1,093
Charlevoix, 2,664—Charlevoix							
Charlevoix Hospital..	Gen	NPAssn	30	20	8	201	1,098
Cheboygan, 5,507—Cheboygan							
Community Memorial Hosp...	Gen	NPAssn	49	37	12	337	2,264
Clare, 2,426—Clare							
Clare Hospital.....	Gen	NPAssn	25	7	6	72	399
Coldwater, 8,542—Branch							
Community Health Center▲...	Gen	County	78	59	16	577	2,965
Crystal Falls, 2,302—Iron							
Crystal Falls Municipal Hosp..	Gen	City	17	8	5	122	907
Dearborn, 94,529—Wayne							
Dearborn Diagnostic Hospital.	Gen	NPAssn	65	10	20	24	375
Dearborn General Hospital....	Gen	Indiv	15	4	12	30	293
Dearborn Medical Centre Hospital.....	Gen	NPAssn	59	..	20	...	...
St. Joseph's Retreat+⊙...	N&M	Church	325	279	..	...	1,053
Veterans Admin. Hospital+▲..	Gen	Vet	1,117	941	..	...	8,933
Detroit, 1,838,517—Wayne							
Alexander Blain Hospital+▲...	Gen	NPAssn	80	50	5	116	2,612
Bethesda Hospital▲...........	TB	NPAssn	83	71	.	...	192
Brent General Hospital........	Gen	NPAssn	68	25	12	...	4,555
Children's Hospital+▲○........	Chil	NPAssn	200	128	..	...	5,462
City of Detroit Receiving Hospital★+▲...	Gen	City	472	500	..	43	18,348
City of Detroit Receiving Hospital (Redford Branch)▲.	Gen	City	46	33	..	8	1,158
[illegible]▲...	Gen	NPAssn	72	48	22	519	2,847
[illegible]▲ ..	N&M	NPAssn	111	95	..	...	1,554
[illegible]+..	Gen	NPAssn	294	195	46	1,466	9,462
[illegible]▲..	TB	NPAssn	200	175	..	...	790
[illegible]▲..	Gen	NPAssn	79	65	45	1,259	4,484
[illegible]▲ ..	Gen	Church	185	142	40	1,561	9,895
Fairview Sanatorium..........	TB	NPAssn	67	66	..	...	139
Florence Crittenton Hosp.+▲..	Gen	NPAssn	158	93	75	2,048	6,631
Grace Hospital★+▲◇..........	Gen	NPAssn	647	559	116	5,421	26,871
Grace Hospital, Northwestern Branch▲.....................	Unit of Grace Hospital						
Harper Hospital★+▲◇..........	Gen	NPAssn	572	502	70	2,967	23,329
Henry Ford Hospital★+▲◇.....	Gen	NPAssn	580	535	61	2,017	17,403
Herman Kiefer Hosp.+▲⊙..	TbMatIso	City	1,200	1,080	68	3,241	10,342
Holy Cross Hospital▲.........	Gen	Church	103	88	50	2,486	5,894
Jennings Memorial Hosp.★+▲..	Gen	NPAssn	130	97	25	427	3,840
Kretzschmar Diagnostic Clinic and Hospital..	Gen	NPAssn	12	5	4	68	283
Lincoln Hospital▲............	Gen	NPAssn	63	50	22	717	2,786
Lynn Hospital.......	Gen	NPAssn	47	33	10	272	1,569
Martin Place Hospital.........	Gen	NPAssn	20	5	6	7	125
McGreger Center Hospital for [illegible]	Conv	NPAssn	33	24	..	..	232
[illegible]	Gen	Indiv	32	22	8	21	225
[illegible]▲	Indus	NPAssn	35	20	..	...	1,044
Miriam Memorial Hosp[illegible]	Unit of Grace Hospital..						
[illegible]▲	Gen	Church	400	429	125	5,247	18,341
[illegible]	Gen	NPAssn	44	30	15	521	2,363
[illegible]▲	Gen	NPAssn	54	45	12	...	1,524
Providence Hospital★+▲◇.....	Gen	Church	350	330	100	3,924	17,264
St. Joseph's Mercy Hosp.★+▲◇.	Gen	Church	173	126	50	1,936	7,851
Saratoga General Hospital.....	Gen	NPAssn	110	82	35	1,363	5,840
Trinity Hospital▲	Gen	NPAssn	100	..	20	...	...
U. S. Marine Hospital★+▲	Gen	USPHS	250	205	...	...	2,305
[illegible]	Gen	Indiv	18	11	3	65	525
[illegible]	Gen	NPAssn	67	53	34	1,865	3,275
[illegible]	Mat	Church	35	24	50	1,301	1,888
[illegible]▲	Gen	NPAssn	246	176	110	4,170	10,192
Dowagiac, 6,534—Cass							
Lee Memorial Hospital........	Gen	Church	38	21	13	344	1,152
Durand, 3,173—Shiawassee							
Durand Hospital.......	Gen	NPAssn	16	10	6	199	776
East Grand Rapids, 6,357—Kent							
Burleson Hospital...... ......:	Proct	Corp	20	19	..	...	625
Eaton Rapids, 3,512—Eaton							
Stimson Community Hospital.	Gen	NPAssn	16	8	9	212	601
Edmore, 825—Montcalm							
Edmore Hospital..............	Gen	Indiv	18	7	5	89	358
Eloise, 1,700—Wayne							
Wayne County General Hospital and Infirmary... +▲...	Ment	County	3,809	3,897	..	...	865
★+▲	GenChr	County	3,859	3,567	3	27	8,774
William J. Seymour Hosp.★+▲.	Unit of Wayne County General Hospital and Infirmary						
Escanaba, 15,068—Delta							
St. Francis Hospital..........	Gen	Church	110	88	22	859	3,722
Flint, 162,800—Genesee							
Hurley Hospital★+▲◇........	Gen	City	415	368	70	2,378	17,786
St. Joseph Hospital★▲◇.......	Gen	Church	230	225	45	2,832	11,680
Women's Hospital▲...........	Gen	NPAssn	40	31	25	1,154	2,017
Fort Custer,—Calhoun							
U. S. Army Hospital..........	Gen	Army	96	...	Reopened	1950	
Veterans Admin. Hospital+▲..	Ment	Vet	2,067	2,006	..	...	575
[illegible]							
[illegible]	Gen	City	36	23	12	444	1,654
[illegible]							
[illegible]▲	TB	State	128	125	..	...	110
Gladwin, 1,872—Gladwin							
Gladwin Hospital.............	Gen	Part	16	11	10	217	663
Goodrich, 470—Genesee							
Goodrich General Hospital▲...	Gen	NPAssn	47	27	15	195	2,090
Grand Haven, 9,466—Ottawa							
Grand Haven Municipal Hospital.....................	Gen	City	44	31	18	598	1,949
Grand Rapids, 175,647—Kent							
Blodgett Memorial Hosp.★+▲◇.	Gen	NPAssn	179	167	50	1,535	6,982
Butterworth Hospital★+▲◇....	Gen	NPAssn	270	288	60	2,545	14,644
Christian Psychopathic Hospital and Pine Rest Sanitarium..................	N&M	NPAssn	440	415	..	...	505
City General Hospital.........	Conv	City	32	30	..	...	255
[illegible]	Proct	Corp	87	44	..	...	1,579
[illegible] Hospital.........	Inst	State	275	200	..	.	1,476
St. Mary's Hospital★+▲◇......	Gen	Church	256	213	62	2,865	9,777
Sunshine Sanatorium..........	TB	County	138	130	..	...	113
Grayling, 2,042—Crawford							
Mercy Hospital▲..............	Gen	Church	50	42	6	318	2,016
Greenville, 6,656—Montcalm							
United Memorial Hospital.....	Gen	NPAssn	30	20	11	447	1,497
Grosse Pointe, 6,279—Wayne							
Bon Secours Hospital	Gen	Church	40	30	..	...	1,688
[illegible]▲ .	Gen	NPAssn	56	40	25	776	3,050
[illegible]							
St. Francis Hospital▲◇........	Gen	Church	110	80	36	1,032	4,792
Hancock, 5,216—Houghton							
St. Joseph's Hospital▲◇.......	Gen	Church	84	61	20	545	3,162
Hart, 2,180—Oceana							
Oceana Hospital..............	Gen	NPAssn	22	19	7	237	2,443
Hartford, 1,836—Van Buren							
Van Buren County Hospital...	Gen	County	40	30	3	14	322
Hastings, 6,060—Barry							
Pennock Hospital▲............	Gen	NPAssn	38	29	8	460	1,896
Hazel Park, 17,791—Oakland							
Helene Meinke Hospital.......	Gen	Indiv	12	9	8	153	534
Highland Park, 46,155—Wayne							
Highland Park General Hospital★+▲◇..............	GenIso	City	255	230	45	1,824	9,400
Hillsdale, 7,282—Hillsdale							
Hillsdale Community Health Center▲.............	Gen	City	75	50	20	468	2,839
Holland, 15,742—Ottawa							
Holland City Hospital.........	Gen	City	72	51	20	849	2,986
Houghton, 3,776—Houghton							
Copper Country Sanatorium..	TB	County	66	50	..	...	91
Howell, 4,349—Livingston							
McPherson Memorial Hospital.	Gen	City	32	13	12	214	..
Michigan State Sanatorium+▲.	TB	State	409	373	..	...	252
Hudson, 2,777—Lenawee							
Thorn Memorial Hospital......	Gen	City	18	10	10	272	620
Ionia, 6,406—Ionia							
Ionia County Memorial Hosp..	Gen	City	21	18	9	403	1,526
Ionia State Hospital+..........	Ment	State	1,099	1,076	..	. .	191
Iron Mountain, 9,578—Dickinson							
Iron Mountain General Hosp...	Gen	NPAssn	29	26	8	345	1,781
Veterans Admin. Hospital.....	Gen	Vet	250	...	..	Estab. 1950	
Ironwood, 11,506—Gogebic							
Grand View Hosiptal..........	GenTb	County	113	90	12	259	2,122
Newport Hospital.............	Gen	NPAssn	12	8	5	132	384
Ishpeming, 8,934—Marquette							
Ishpeming Hospital▲..........	Gen	NPAssn	58	49	16	299	1,880
Jackson, 50,904—Jackson							
W. A. Foote Memorial Hospital★▲◇.......	Gen	City	155	137	30	1,225	7,621
Jackson County Sanatorium○..	TB	County	76	77	..	...	52
Mercy Hospital▲◇............	Gen	Church	144	93	35	1,138	5,272
Kalamazoo, 57,326—Kalamazoo							
Borgess Hospital★+▲◇.........	Gen	Church	250	189	35	1,706	7,632
Bronson Methodist Hosp.★+▲◇	Gen	Church	140	132	30	1,342	5,938
Fairmount Hospital▲..........	TbIso	County	90	58	..	...	261
Kalamazoo State Hospital+⊙...	Ment	State	3,380	3,348	..	...	577
Lakeview, 824—Montcalm							
Kelsey Hospital...............	Gen	Part	20	12	5	252	1,100
Lansing, 91,694—Ingham							
Edward W. Sparrow Hospital★+▲◇...............	Gen	NPAssn	281	191	53	2,475	10,384
Ingham Sanatorium+▲⊙.......	TB	County	139	127	..	...	434
St. Lawrence Hospital ★+▲◇...	Gen	Church	275	187	55	2,204	9,945
Lapeer, 6,116—Lapeer							
Lapeer State Home and Training School▲............	MeDe	State	4,410	4,108	3	3	479
Laurium, 3,219—Houghton							
Calumet Public Hospital......	Gen	NPAssn	39	27	12	323	1,187
Ludington, 9,066—Mason							
Paulina Stearns Hospital......	Gen	NPAssn	46	34	10	396	2,011
Manistee, 8,598—Manistee							
Mercy Hospital and Sanit.▲...	Gen	Church	50	31	10	345	1,365
Manistique, 5,075—Schoolcraft							
Schoolcraft Memorial Hospital.	Gen	County	32	...	12	Estab. 1950	
Marquette, 17,345—Marquette							
Morgan Heights Sanat.+▲......	TB	County	93	91	..	...	86
St. Luke's Hospital▲◇........	Gen	NPAssn	142	116	12	447	3,619
St. Mary's Hospital▲..........	Gen	Church	60	50	14	320	1,849

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Marshall, 5,740—Calhoun							
Oaklawn Hospital	Gen	NPAssn	21	16	12	231	780
Mason, 3,506—Ingham							
Mason General Hospital	Gen	NPAssn	20	12	6	150	546
[illegible]							
[illegible]▲	Gen	Church	150	58	24	510	3,023
[illegible]							
Midland Hospital▲	Gen	NPAssn	83	72	20	904	4,281
Milan, 2,758—Washtenaw							
Federal Correctional Institution	Inst	USPHS	34	17	..	...	492
Monroe, 21,275—Monroe							
Mercy Hospital▲	Gen	Church	66	56	26	978	3,942
Monroe Hospital	Gen	Church	83	53	20	532	3,105
Morenci, 1,981—Lenawee							
Blanchard Hospital	Gen	NPAssn	14	7	6	80	468
Mount Clemens, 16,815—Macomb							
St. Joseph Hospital▲◇	Gen	Church	128	108	42	1,741	6,947
U. S. Air Force Hospital	Gen	USAF	75	30	..	5	1,376
Mount Pleasant, 11,392—Isabella							
Central Michigan Community Hospital▲	Gen	NPAssn	50	52	16	607	3,185
Munising, 4,319—Alger							
Munising Hospital	Gen	NPAssn	28	8	5	131	492
Muskegon, 48,047—Muskegon							
Hackley Hospital+▲◇	Gen	NPAssn	184	153	34	1,870	6,844
Mercy Hospital+▲◇	Gen	Church	110	104	33	937	4,536
Muskegon County Sanat.▲	TB	County	75	73	..	..	71
Newberry, 2,770—Luce							
Newberry State Hospital	Ment	State	1,748	1,650	..	...	881
Niles, 13,117—Berrien							
Pawating Hospital	Gen	NPAssn	76	63	20	791	3,881
Northville, 3,221—Wayne							
East Lawn Sanatorium	TB	Corp	94	94	..	...	101
Sessions Hospital	Gen	NPAssn	46	30	12	370	1,905
Wm. H. Maybury Sanatorium (Detroit Municipal Tuberculosis Sanatorium)+▲	TB	City	744	739	..	...	724
Norway, 3,275—Dickinson							
Penn Hospital	Gen	City	17	13	7	344	763
Omer, 295—Arenac							
Omer Hospital	Gen	Indiv	16	7	5	75	426
[illegible]							
[illegible]	Gen	City	32	21	10	134	1,307
[illegible]							
Pine Crest State Sanatorium	TB	State	100	83	..	...	93
O[illegible]							
[illegible]▲	Gen	NPAssn	88	81	20	964	4,965
P[illegible]							
Lake View Community Hosp.	Gen	City	22	17	6	222	1,136
Petoskey, 6,431—Emmet							
Little Traverse Hospital▲	Gen	NPAssn	103	89	10	418	4,275
Lockwood General Hospital	Gen	NPAssn	55	37	8	216	1,707
Pigeon, 1,005—Huron							
Scheurer Hospital	Gen	NPAssn	20	13	10	221	718
P[illegible]							
[illegible]	Gen	City	25	17	11	318	914
Pontiac, 73,112—Oakland							
Oakland County Contagious Hospital	VenIso	County	85	41	..	...	586
Oakland County Tuberculosis Sanatorium+▲	TB	County	240	219	..	...	200
Pontiac General Hospital★+▲	Gen	City	198	189	45	2,205	12,379
Pontiac State Hospital+	Ment	State	2,883	2,634	..	...	1,141
St. Joseph Mercy Hosp.★+▲◇	Gen	Church	259	226	77	2,634	11,396
Port Huron, 35,597—St. Clair							
Port Huron Hospital▲	GenIso	NPAssn	150	110	24	1,019	6,033
Powers, 258—Menominee							
Pinecrest Sanatorium▲	TB	Counties	140	127	..	...	132
Reed City, 2,246—Osceola							
Reed City Hospital	Gen	City	34	30	10	314	1,527
River Rouge, 20,366—Wayne							
Sidney A. Sumby Memorial Hospital	Gen	NPAssn	40	25	10	296	951
Rochester, 4,269—Oakland							
Haven Sanitarium	N&M	Corp	43	40	..	...	221
Royal Oak, 46,817—Oakland							
Oakland Center Hospital	Gen	NPAssn	12	3	..	...	134
Royal Oak General Hospital	Gen	City	24	20	12	470	1,852
Saginaw, 92,352—Saginaw							
Saginaw County Hospital▲	TbIso	County	210	200	..	...	461
Saginaw General Hosp.★+▲◇	Gen	NPAssn	206	199	50	1,761	10,918
St. Luke's Hospital+▲	Gen	Church	66	60	18	769	3,048
St. Mary's Hospital▲◇	*Gen*	*Church*	*172*	*146*	*35*	1,265	7,556
Veterans Admin. Hospital	Gen	Vet	202	...	..	Estab. 1950	
St. Clair, 4,088—St. Clair							
St. Clair Community Hospital	Gen	City	20	14	8	481	1,218
St. Johns, 4,948—Clinton							
Clinton Memorial Hospital▲	Gen	NPAssn	75	52	20	601	2,792
St. Joseph, 10,123—Berrien							
[illegible]▲	Gen	NPAssn	32	29	12	317	2,237
[illegible]							
[illegible] Memorial Hospital▲	Gen	County	127	113	19	762	4,977
Shelby, 1,488—Oceana							
Shelby Community Hospital	Gen	City	25	10	10	184	815
South Haven, 5,596—Van Buren							
South Haven Hospital▲	Gen	City	40	39	12	352	1,871
Stambaugh, 1,969—Iron							
General Hospital Company of Iron River District	Gen	NPAssn	28	14	12	310	992
Sturgis, 7,789—St. Joseph							
Sturgis Memorial Hospital▲	Gen	City	40	24	10	566	1,730
Tecumseh, 4,006—Lenawee							
Herrick Memorial Hospital	Gen	City	34	23	16	357	1,393

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Three Rivers, 6,757—St. Joseph							
Three Rivers Hospital▲	Gen	City	34	26	8	369	1,
Traverse City, 16,679—Grand Traverse							
Boardman Valley Hospital	Gen	County	18	13	4	62	2
James Decker Munson Hospital★+▲	Gen	NPAssn	132	129	20	748	4,6
Traverse City State Hosp.+▲⊙	Ment	State	2,861	2,797	..	...	
Van Dyke, 7,000—Macomb							
Memorial Hospital	Gen	Part	30	19	10	184	1,5
Wakefield, 3,337—Gogebic							
Divine Infant of Prague Hosp.	Gen	Church	16	15	7	190	6
Watervliet, 1,317—Berrien							
Community Hospital	Gen	NPAssn	30	25	6	218	1,
Wayne, 9,372—Wayne							
Wayne Clinic Hospital	Gen	Indiv	15	9	6	125	6
West Branch, 2,087—Ogemaw							
Tolfree Memorial Hospital	Gen	City	19	4	7	307	1,6
Wyandotte, 36,666—Wayne							
Wyandotte General Hosp.+▲	Gen	City	167	138	37	2,337	9,
Ypsilanti, 18,267—Washtenaw							
Beyer Memorial Hospital▲	Gen	NPAssn	156	134	44	2,187	8,
Leland Sanatorium▲	*TB*	*NPAssn*	*125*	*87*	..	...	
Ypsilanti State Hospital+▲⊙	Ment	State	4,000	3,936	..	...	1,0
Zeeland, 3,072—Ottawa							
Thomas G. Huizinga Memorial Hospital	Gen	NPAssn	17	8	8	402	

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ann Arbor, 47,279—Washtenaw							
Ann Arbor School	MeDe	Indiv	60	50	..	...	
Centerville, 812—St. Joseph							
St. Joseph County Hospital and Infirmary	InstMent	County	40	40	..	...	5
Coldwater, 8,542—Branch							
Coldwater State Home and Training School	MeDe	State	1,742	1,599	..	...	2
Detroit, 1,838,517—Wayne							
Barnett Hospital and Clinic	ENT	NPAssn	17	1	..	...	3
Central Hospital	Gen	Indiv	31	28	..	...	3
Doctors' Hospital	Conv	Indiv	35	35	..	...	
General Hospital and Clinic	TB	Indiv	47	46	..	...	1
Good Samaritan Hospital	Conv	NPAssn	30	25	..	...	
Michigan Memorial Hospital	Conv	Corp	52	40	..	...	5
Douglas, 421—Allegan							
Community Hospital	Gen	NPAssn	15	6	5	91	3
East Grand Rapids, 6,357—Kent							
O'Keefe Sanitarium	Conv	Corp	31	30	..	...	
Farmington, 2,312—Oakland							
Children's Hospital Convalescent Home	Conv	NPAssn	190	68	..	...	
Ferndale, 29,670—Oakland							
Ardmore Hospital	Gen	NPAssn	22	12	12	345	1,1
Flint, 162,800—Genesee							
Genesee County Hospital and Infirmary	InstGen	County	100	*113*	*10*	...	459
Hynd's Convalescent Hospital	*Conv*	*Part*	*70*	*65*	..	...	85
Kith Haven	Conv	Part	*23*	21	..	...	11
Grand Rapids, 175,647—Kent							
Evangeline Home and Hosp.	Mat	Church	15	7	16	190	199
Kent County Receiving Hosp.	Ment	County	28	15	..	...	551
Mary Free Bed Guild Convalescent Home and Orthopedic Center	Orth	NPAssn	96	99	..	...	510
Jackson, 50,904—Jackson							
Jackson County Isolation Hospital	IsoTb	County	45	10	..	...	402
Southern Michigan Prison Hospital	Inst	State	200	164	..	...	3,255
Lansing, 91,694—Ingham							
Boys' Vocational School Hospital	Inst	State	40	6	..	...	1,022
Marquette, 17,345—Marquette							
Marquette Branch Prison Hospital	Inst	State	24	6	..	...	226
Mount Clemens, 16,815—Macomb							
Sigma Gamma Hospital School⊙	Orth	NPAssn	50	38	..	...	115
Mount Pleasant, 11,392—Isabella							
Mount Pleasant State Home and Training School	MeDe	State	394	310	..	...	163
Northville, 3,221—Wayne							
Wayne County Training School	MeDe	County	835	721	..	...	111
Plainwell, 2,753—Allegan							
Del Vista Sanitarium	N&M	Corp	35	23	..	...	291
Plymouth, 6,649—Wayne							
Plymouth Hospital	Gen	Part	7	1	3	24	123
Pontiac, 73,112—Oakland							
Oakland County Infirmary	Inst	County	200	194	..	...	1,070
Romulus, 755—Wayne							
Romulus Hospital	Gen	NPAssn	18	3	6	40	252
Stockbridge, 1,096—Ingham							
Rowe Memorial Hospital	Gen	Indiv	10	4	5	171	335
Trenton, 6,214—Wayne							
Trenton Hospital	Gen	Indiv	25	8	9	129	201
Vicksburg, 2,161—Kalamazoo							
Franklin Memorial Hospital	Gen	City	18	10	8	136	689
Warren, 582—Macomb							
Glen Eden Hospital	*N&M*	*Part*	*30*	...	..	Estab. 1950	

Key to symbols and abbreviations is on page 124

MINNESOTA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ada, 2,105—Norman							
[illegible]	Gen	City	30	22	8	200	957
[illegible]	Gen	NPAssn	17	14	6	155	665
[illegible]▲	TB	State	350	270	..	...	410
[illegible]▲	Gen	NPAssn	121	69	45	1,023	4,222
[illegible]▲	Gen	Church	30	23	10	373	1,342
[illegible]	Gen	Church	33	23	12	248	1,102
Anoka, 7,379—Anoka							
[illegible]	Gen	NPAssn	16	7	9	174	584
[illegible]▲	Ment	State	1,058	1,022	..	...	129
[illegible]	Gen	Indiv	25	9	5	121	404
[illegible]	Gen	City	32	10	10	97	413
St. Olaf Lutheran Hospital▲	Gen	NPAssn	105	80	20	993	4,648
Battle Lake, 623—Otter Tail							
Otter Tail County Sanatorium	TB	County	48	21	..	...	7
Baudette, 1,017—Lake of the Woods							
Baudette Community Hospital	Gen	NPAssn	24	...	7	Estab. 1950	
Bemidji, 9,935—Beltrami							
Lutheran Hospital▲⊙	Gen	NPAssn	75	48	18	572	2,963
Benson, 3,388—Swift							
Swift County-Benson Hospital	Gen	CyCo	40	...	12	Estab. 1950	
Bertha, 578—Todd							
Thiel Hospital	Gen	NPAssn	17	15	8	254	903
Big Fork, 382—Itasca							
Northern Itasca Hospital	Gen	City	11	7	4	60	477
Biwabik, 1,245—St. Louis							
Biwabik Hospital	Gen	Indiv	10	6	7	86	253
Braham, 578—Isanti							
Braham Community Hospital	Gen	NPAssn	26	21	7	170	1,010
Brainerd, 12,558—Crow Wing							
[illegible]▲	Gen	Church	75	74	18	701	3,662
[illegible]▲	Gen	Church	89	69	14	648	3,582
[illegible]	Gen	Part	10	4	4	51	205
Caledonia, 2,237—Houston							
Caledonia Community Hosp.	Gen	NPAssn	24	12	12	119	534
Cambridge, 2,970—Isanti							
Cambridge State School and Hospital	Epil	State	1,108	1,076	..	...	30
[illegible]	TB	Counties	100	106	..	...	204
Cass Lake, 1,924—Cass							
Cass Lake Indian Hospital	Gen	IA	36	16	4	120	1,057
Cloquet, 7,663—Carlton							
Fond du Lac Indian Hospital	Gen	IA	22	13	4	60	437
Raiter Hospital▲	Gen	NPAssn	34	23	12	157	1,479
Cokato, 1,393—Wright							
Cokato Hospital	Gen	Indiv	19	10	6	71	539
Crookston, 7,352—Polk							
Bethesda Hospital▲	Gen	Church	54	52	12	216	2,632
St. Francis Hospital	Gen	Church	170	66	25	New build'g	
[illegible]	TB	Counties	60	40	..	...	35
[illegible]							
Miners Hospital	Gen	Church	25	24	8	219	1,323
Dawson, 1,821—Lac qui Parle							
Dawson Hospital	Gen	NPAssn	35	23	7	100	804
Deerwood, 570—Crow Wing							
[illegible]	TB	Counties	25	15	..	...	16
[illegible]▲	Gen	Church	60	55	15	492	2,907
Duluth, 104,066—St. Louis							
[illegible]	N&M	Corp	15	11	..	...	109
[illegible]▲	Gen	City	92	77	..	...	1,065
[illegible]▲	Gen	NPAssn	276	278	33	1,716	11,390
[illegible]▲	Gen	Church	285	266	35	1,492	10,595
Ely, 5,402—St. Louis							
Ely-Winton Memorial Hosp.	Gen	NPAssn	29	8	6	76	361
Eveleth, 5,829—St. Louis							
More Hospital▲	Gen	NPAssn	26	18	10	127	850
[illegible]							
[illegible]p.	Gen	NPAssn	50	41	11	655	2,340
[illegible]ny▲	McDe	State	188	114	16	7	898
[illegible]◇	Gen	Church	65	40	17	585	2,152
[illegible]—Dakota							
Sanford Hospital	Gen	NPAssn	31	21	4	108	593
Fergus Falls, 12,873—Otter Tail							
Fergus Falls State Hosp.▲⊙	Ment	State	2,000	1,995	..	...	431
George B. Wright Memorial Hospital▲	Gen	NPAssn	52	43	12	264	1,745
St. Luke's Hospital▲	Gen	NPAssn	71	60	15	418	2,013
Fosston, 1,605—Polk							
Fosston Community Hospital	Gen	NPAssn	21	13	6	202	1,057
Glencoe, 2,797—McLeod							
Glencoe Municipal Hospital	Gen	City	64	46	12	368	2,198
Glenwood, 2,646—Pope							
Glenwood Community Hosp.▲	Gen	City	26	21	10	238	1,176
Graceville, 1,020—Big Stone							
Holy Trinity Hospital▲	Gen	Church	28	17	10	195	1,538
Grand Rapids, 5,966—Itasca							
Itasca County Hospital▲○	Gen	County	67	50	22	716	3,159
Granite Falls, 2,502—Yellow Medicine							
[illegible]	Gen	City	40	18	12	220	999
[illegible]	TB	Counties	48	36	..	...	29
[illegible] Veterans' Memorial Hospital	Gen	NPAssn	34	19	6	169	933

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hastings, 6,563—Dakota							
Hastings State Hospital	Ment	State	1,093	1,026	..	...	111
Hendricks, 740—Lincoln							
Hendricks Community Hosp.	Gen	NPAssn	35	28	8	158	2,097
Heron Lake, 852—Jackson							
[illegible]	Gen	City	19	...	3	79	...
[illegible]							
[illegible]▲	Gen	Church	132	107	20	668	4,972
Hutchinson, [illegible]—McLeod							
[illegible]	[illegible]	NPAssn	45	33	12	486	1,863
[illegible]							
Hospital	Gen	NPAssn	62	33	14	254	1,454
Jackson, 3,316—Jackson							
Halloran Hospital	Gen	Church	20	14	5	188	632
Karlstad, 501—Kittson							
Karlstad Memorial Hospital	Gen	NPAssn	7	...	5	Estab. 1950	
Lake City, 3,450—Wabasha							
Lake City Municipal Hospital	Gen	City	32	28	7	184	875
Lake Park, 654—Becker							
Sand Beach Sanatorium	TB	Counties	42	25	..	...	19
Lanesboro, 1,094—Fillmore							
Dr. R. B. Johnson Hospital	Gen	Indiv	14	13	6	76	251
Litchfield, 4,596—Meeker							
Litchfield Hospital	Gen	NPAssn	47	36	12	286	1,567
Little Falls, 6,670—Morrison							
St. Gabriel's Hospital▲◇	Gen	Church	96	79	17	709	4,813
Littlefork, 608—Koochiching							
Littlefork Hospital	Gen	NPAssn	22	16	8	167	1,039
Long Prairie, 2,431—Todd							
Long Prairie Hospital	Gen	NPAssn	20	14	8	160	777
Luverne, 3,657—Rock							
Luverne Municipal Hospital	Gen	City	15	3	10	256	620
Madison, 2,292—Lac que Parle							
Madison Hospital	Gen	NPAssn	23	14	5	111	733
Mahnomen, 1,467—Mahnomen							
St. Anthony's Hospital	Gen	Church	16	13	6	162	698
Mankato, 18,785—Blue Earth							
Immanuel Hospital▲	Gen	Church	66	61	14	525	2,827
St. Joseph's Hospital▲	Gen	Church	124	85	21	646	4,006
Marshall, 5,888—Lyon							
Louis Weiner Memorial Hospital	Gen	City	56	...	12	Estab. 1950	
Melrose, 2,103—Stearns							
Melrose Hospital	Gen	Corp	23	16	8	315	1,475
Milaca, 1,912—Mille Lacs							
Memorial Hospital	Gen	NPAssn	15	9	6	124	618
Minneapolis, 517,277—Hennepin							
Abbott Hospital*+▲◇	Gen	Church	126	121	24	1,005	7,903
Asbury Hospital*+▲◇	Gen	Church	150	125	25	692	6,168
Eitel Hospital▲◇	Gen	NPAssn	102	101	18	740	5,352
Elizabeth Kenny Institute▲	PhyMed	NPAssn	120	92	..	...	396
Fairview Hospital+▲◇	Gen	Church	190	154	43	1,622	8,461
Franklin Hospital	ChrConv	Corp	69	68	..	...	34
Janney Children's Hospital	Unit of Abbot Hospital						
Lutheran Deaconess Home and Hospital*+▲◇	Gen	Church	160	157	40	1,236	7,455
Maternity Hospital+▲	Mat	NPAssn	38	29	45	1,696	4,224
Minneapolis General Hospital*+▲◇	Gen	City	574	368	55	592	8,225
Minnesota General Hospital	See University of Minnesota Hospitals						
Mount Sinai Hospital	Gen	NPAssn	185	.	32	Estab. 1950	
Northwestern Hospital*+▲◇	Gen	NPAssn	260	225	40	1,780	10,650
St. Andrew's Hospital▲	Gen	NPAssn	82	63	18	435	3,027
St. Barnabas Hospital*+▲◇	Gen	NPAssn	199	173	40	2,098	9,012
St. Mary's Hospital*+▲◇	Gen	Church	335	291	50	2,743	13,619
Sheltering Arms Hospital▲	Orth	NPAssn	49	60	..	..	153
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	58	..	...	112
Swedish Hospital*+▲◇	Gen	NPAssn	420	338	72	2,970	15,647
University of Minnesota Hospitals*+▲◇	Gen	State	450	386	25	444	10,619
Veterans Admin. Hospital+▲	Gen	Vet	1,046	923	..	...	12,472
Montevideo, 5,443—Chippewa							
Montevideo Hospital	Gen	NPAssn	50	31	10	409	2,112
Monticello, 1,225—Wright							
Hart Hospital	Gen	Part	15	8	4	129	396
Moorhead, 14,798—Clay							
St. Ansgar's Hospital	Gen	Church	55	49	15	677	2,237
Moose Lake, 1,600—Carlton							
Moose Lake Community Hosp.	Gen	Indiv	18	7	4	167	633
Moose Lake State Hospital▲⊙	Ment	State	1,200	1,062	..	...	425
Mora, 2,038—Kanabec							
Kanabec Hospital	Gen	County	22	21	8	318	1,471
Morris, 3,809—Stevens							
Morris Hospital	Gen	Indiv	16	10	6	163	585
Stevens County Hospital	Gen	NPAssn	16	10	7	136	690
[illegible]ood							
[illegible]	Gen	NPAssn	30	13	..	...	645
[illegible]	Gen	NPAssn	21	12	8	145	620
New Prague, 1,911—Le Sueur							
New Prague Community Hospital	Gen	NPAssn	18	9	6	338	733
New Ulm, 9,312—Brown							
Loretto Hospital	Gen	Church	50	36	10	292	1,866
Union Hospital	Gen	NPAssn	68	52	12	286	1,933
Nopeming, 75—St. Louis							
Nopeming Sanatorium+▲○	TB	County	277	262	..	...	575
Northfield, 7,471—Rice							
Northfield City Hospital	Gen	City	34	26	12	350	1,964
Oak Terrace, 200—Hennepin							
[illegible]	Unit of Glen Lake Sanatorium						
[illegible]▲	TB	County	676	577	..	...	403

Key to symbols and abbreviations is on page 124

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ortonville, 2,572—Big Stone							
Ortonville Municipal Hosp.	Gen	City	20	13	8	202	773
Owatonna, 10,149—Steele							
Owatonna City Hospital	Gen	City	58	49	15	509	2,312
Parkers Prairie, 761—Otter Tail							
St. Raphael Hospital	Gen	Church	12	4	5	113	280
[illegible]							
[illegible]	Gen	Church	42	22	12	276	1,270
[illegible]	Gen	Indiv	9	5	3	58	246
[illegible]	Gen	Church	40	26	8	214	1,661
Lakeside Memorial Hospital	Gen	NPAssn	36	28	6	26	264
Pipestone, 5,256—Pipestone							
Ashton Memorial Hospital	Gen	NPAssn	45	33	11	407	1,666
Preston, 1,398—Fillmore							
Preston Hospital	Gen	Indiv	15	7	6	190	229
Princeton, 2,094—Mille Lacs							
Community Hospital	Gen	NPAssn	24	17	9	293	1,114
Puposky, 75—Beltrami							
Lake Julia [illegible]	TB	Counties	52	43		.	58
[illegible]	Gen	IA	23	18	6	132	940
Red Wing Hospital	Gen	City	40	22	7	113	1,087
St. John's Hospital▲	Gen	NPAssn	94	62	20	666	2,728
[illegible]wood							
[illegible]	Gen	City	22	14	8	357	1,003
[illegible]							
[illegible]	Gen	Corp	11	7	4	111	493
Colonial Hospital▲○	Gen	Corp	292	222		..	9,039
Kahler Hospital▲○	Gen	Corp	129	100	.	...	4,678
Rochester State Hospital+▲○	Ment	State	1,604	1,583			679
St. Mary's Hospital▲○	Gen	Church	844	690	61	1,507	17,978
Worrall Hospital▲○	ENT SkaCa	Corp	185	142	.	..	6,365
Roseau, 2,221—Roseau							
Budd Hospital	Gen	Indiv	25	17	10	202	808
Rush City, 1,152—Chisago							
Rush City Hospital	Gen	City	25	18	6	199	831
St. Cloud, 28,375—Stearns							
Minnesota State Reformatory Hospital	Inst	State	30	12			270
St. Cloud Hospital▲○	Gen	Church	276	248	54	2,152	10,434
Veterans Admin. Hospital▲⊙	Ment	Vet	1,382	1,347		...	343
[illegible]	Gen	Church	28	21	10	186	793
[illegible]	GenTB	CyCo	850	625	55	463	8,052
Bethesda Hospital▲○*	*Gen*	*Church*	*162*	*134*	*38*	*1,739*	*8,007*
Charles T. Miller Hosp.★+▲⊙	Gen	NPAssn	275	266	50	1,921	9,014
Children's Hospital▲⊙	Chil	NPAssn	75	66	.		2,852
Crestview Hospital	N&M	Corp	38	32		..	219
Gillette State Hospital for Crippled Children+▲⊙	Orth	State	225	193	..		592
Midway Hospital▲○	Gen	Church	125	111	35	1,692	6,194
Mounds Park Hospital▲○	Gen	Church	132	129	14	524	3,089
[illegible]	Gen	NPAssn	135	107	.		3,251
Ramsey County [illegible]osis Pavilion	Unit of Ancker Hospital						
Riverview Memorial Hospital▲	Gen	NPAssn	65	58	15	407	3,291
St. John's Hospital▲	Gen	Church	65	80	15	816	4,234
St. Joseph's Hospital+▲○	Gen	Church	291	251	54	2,171	11,235
St. Luke's Hospital	Gen	NPAssn	116	98	24	531	4,316
Salvation Army Booth Memorial [illegible]	Mat	Church	50	6	10	180	219
[illegible]	Gen	City	36	21	11	330	1,184
[illegible]▲	Ment	State	2,424	2,345	.	.	892
Shakopee, 3,180—Scott							
St. Francis Hospital	Gen	Church	21	18	10	288	1,237
Slayton, 1,879—Murray							
Home Hospital	Gen	NPAssn	25	21	8	308	1,279
Sleepy Eye, 3,287—Brown							
Sleepy Eye Municipal Hosp.	Gen	City	32	14	10	294	797
Spring Grove, 1,088—Houston							
Spring Grove Hospital	Gen	NPAssn	20	10	6	101	436
Staples, 2,775—Todd							
Staples Municipal Hospital	Gen	City	25	24	8	132	871
Starbuck, 1,140—Pope							
[illegible]	Gen	NPAssn	15	9	4	88	354
[illegible]							
[illegible]▲	Gen	CyCo	55	36	10	372	1,779
[illegible] State Prison Hospital▲	Inst	State	66	35	..	...	403
Thief River Falls, 6,923—Pennington							
Mercy Hospital	Gen	NPAssn	47	30	10	305	1,518
Oakland Park Sanatorium	TB	Counties	65	34	.	...	23
St. Luke's Hospital▲	Gen	NPAssn	66	38	8	243	1,887
Tracy, 3,011—Lyon							
Clinic Hospital	Gen	Corp	15	9	5	72	288
Tracy Hospital	Gen	NPAssn	35	22	10	197	1,099
Two Harbors, 4,399—Lake							
Community Health Center	Gen	NPAssn	33	21	8	126	815
Tyler, 1,104—Lincoln							
Tyler Hospital	Gen	City	35	29	10	244	1,374
Virginia, 12,332—St. Louis							
Pioneers'Infirmary	Chr	NPAssn	122	...	..	Estab. 1950	
Virginia Municipal Hospital▲	Gen	City	101	79	25	556	3,117
Wabasha, 2,468—Wabasha							
Buena Vista Sanatorium	TB	Counties	34	31	..	...	37
St. Elizabeth's Hospital	Gen	Church	75	42	10	340	1,409

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Waconia, 1,568—Carver							
Nagel Hospital	Gen	Indiv	28	16	8	49	512
Wadena, 3,954—Wadena							
Fair Oaks Lodge Sanatorium	TB	Counties	34	25	.	...	16
Wesley Hospital▲	Gen	NPAssn	46	30	10	443	1,526
Walker, 1,175—Cass							
Walker Hospital	Gen	Indiv	19	11	4	44	131
Warren, 1,778—Marshall							
Warren Hospital▲	Gen	Church	40	29	10	237	1,520
Warroad, 1,276—Roseau							
Warroad Municipal Hospital	Gen	City	25	10	6	86	415
Waseca, 4,917—Waseca							
Waseca Memorial Hospital	Gen	City	24	15	9	316	843
Wayzata, 1,735—Hennepin							
[illegible]	Gen	NPAssn	15	8	5	66	307
[illegible]	Gen	IA	24	12	8	110	531
[illegible]	Ment	State	1.450	1,418	..	...	430
[illegible] Hospital	Gen	NPAssn	29	19	10	284	1,032
W[illegible]	Gen	City	12	8	4	135	350
Winona, [illegible]—Winona							
Winona General Hospital▲	Gen	NPAssn	112	65	20	874	2,580
Worthington, 7,907—Nobles							
[illegible]	TB	Counties	54	37	..	...	36
[illegible]	Gen	NPAssn	34	30	14	451	1,911

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Belgrade, 553—Stearns							
Belgrade [illegible]	Gen	Indiv	12	9	5	56	540
Blue E[illegible]							
Com[illegible]	Gen	City	32	10	12	...	721
Comfrey, 555—Brown							
Comfrey Hospital	Gen	NPAssn	9	6	5	49	250
Hastings, 6,363—Dakota							
[illegible] Hospital	Gen	Indiv	26	15	4	4	121
[illegible]							
[illegible]	Gen	City	14	7	4	98	489
Minn[illegible]							
Gl[illegible]	N&M	NPAssn	75	70	.	...	835
[illegible]	Unit of Glenwood Hills Hospitals						
[illegible] Hospital	Inst	State	84	62	..	...	212
Parkview Hospital	Conv	NPAssn	167	146	..	...	621
Rest Hospital	N&M	Indiv	21	18	..	...	274
[illegible]	Conv	NPAssn	33	30	..	...	44
[illegible]	Conv	NPAssn	25	20	..	...	18
Northfield, [illegible]—Rice							
Allen Memorial Hospital	Inst	NPAssn	20	3	..	...	374
St. Olaf College Hospital	Inst	Church	13	3	..	...	268
Owatonna, 10,149—Steele							
Owatonna State School Hospital	*McDe*	*State*	*50*	*12*	..	...	596
Pelican *Rapids*, 1,659—Otter Tail							
Pelican Valley Hospital	Gen	NPAssn	16	10	3	82	708
Red Wing, 10,626—Goodhue							
[illegible]	Inst	State	20	8	..	...	1,041
[illegible]							
[illegible]	TB	CyCo	80	34	..	...	25
Shakopee, 3,180—Scott							
[illegible]	Conv	Corp	75	32	..	...	1,601
[illegible]							
Wheaton Community Hospital	Gen	*City*	*10*	*5*	*4*	*81*	350

MISSISSIPPI

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Aberdeen, 5,282—Monroe							
Aberdeen Hospital	*Gen*	NPAssn	25	11	6	234	818
Amory, 4,986—Monroe							
Gilmore S[illegible]	Gen	NPAssn	35	19	6	194	1,493
[illegible]	Gen	*Indiv*	24	14	5	282	1,460
Belzoni, 4,067—Humphreys							
Humphreys County Memorial Hospital	Gen	County	40	...	12	Estab. 1950	
Biloxi, 37,034—*Harrison*							
New Biloxi Hospital	Gen	NPAssn	74	29	20	599	1,741
U. S. Air Force Hospital▲	Gen	USAF	175	136	19	750	5,696
Veterans Admin. Center▲	Gen	Vet	200	191	..	...	2,421
[illegible]	Gen	County	49	25	12	376	1,721
Kings Daughters Hospital	Gen	NPAssn	64	31	21	587	3,083
Byhalia, 543—*Marshall*							
Leo[illegible]	N&M	Indiv	17	12	..	...	389
Canto[illegible]							
Kin[illegible]	Gen	*NPAssn*	40	22	8	293	1,807
Cary, [illegible]							
[illegible]	Gen	Indiv	10	2	5	35	110
[illegible]							
[illegible] Hospital	Gen	Counties	28	21	8	141	950
Charleston, 2,612—Tallahatchie							
[illegible]	Gen	Indiv	35	21	1	110	1,123
Cl[illegible]							
[illegible]	Gen	NPAssn	36	30	14	319	1,716

Key to symbols and abbreviations is on page 124

MISSISSIPPI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Cleveland, 6,731—Bolivar							
[illegible]	Gen	City	33	23	12	375	1,800
[illegible]▲	Gen	NPAssn	47	26	9	291	1,623
Doster Hospital and Clinic▲◇..	Gen	NPAssn	50	27	11	144	1,589
Corinth, 9,698—Alcorn							
Community Hospital..........	Gen	City	63	28	12	263	1,634
Corinth Hospital	Gen	Indiv	30	16	9	248	937
[illegible] Hospital	Gen	CyCo	25	...	8	Estab.	1950
[illegible]▲	Gen	NPAssn	118	89	24	497	4,370
[illegible]	Ven	State	275	198	..	...	11,093
[illegible]	Gen	Indiv	25	12	2	15	979
[illegible]	Gen	CyCo	58	51	23	538	2,831
Grenada, 7,387—Grenada							
Grenada Hospital◇............	Gen	Corp	75	33	12	270	...
Gulfport, 22,428—Harrison							
Memorial Hospital....	Gen	CyCo	100	60	23	725	3,797
Veterans Admin. Hospital+▲..	Ment	Vet	1,098	1,071	..	...	612
Hattiesburg, 29,432—Forrest							
Methodist Hospital◇...........	Gen	Church	127	86	18	905	5,591
South Mississippi Infirmary...	Gen	Indiv	60	33	15	374	2,123
Hazlehurst, 3,402—Copiah							
Hardy Wilson Memorial Hospital	Gen	County	50	.	10	Estab.	1950
Holly Springs, 3,269—Marshall							
North Mississippi Hospital....	Gen	Counties	30	20	5	145	1,238
Houston, 1,668—Chickasaw							
Houston Hospital.	Gen	NPAssn	50	30	8	135	1,710
Indianola, 4,384—Sunflower							
[illegible]	Gen	NPAssn	27	15	8	148	1,032
[illegible] Hospital★+▲◇..............	Gen	Church	256	213	40	1,532	12,076
St. Dominic's Hospital▲◇.....	Gen	Church	79	63	13	581	4,024
Veterans Admin. Hospital.....	Gen	Vet	750	457	..	. .	6,702
Kosciusko, 6,741—Attala							
Montfort Jones Memorial Hospital.....................	Gen	CyCo	43	26	15	479	1,652
Laurel, 24,988—Jones							
Laurel General Hospital◇......	Gen	NPAssn	60	36	8	204	2,319
Masonite Hospital.	Gen	NPAssn	30	28	8	358	2,344
South Mississippi Charity Hospital◇	Gen	State	125	70	15	681	3,181
Le[illegible]							
[illegible]	Gen	City	22	6	9	154	861
Lexington, 3,194—Holmes							
Holmes County Community Hospital......	Gen	County	25	16	6	190	996
Macon, 2,254—Noxubee							
Macon Hospital................	Gen	NPAssn	30	16	7	116	1,089
Magee, 1,726—Simpson							
Magee General Hospital.......	Gen	NPAssn	28	16	8	316	1,882
Magnolia, 1,986—Pike							
Beacham Memorial Hospital	Gen	NPAssn	25	13	6	192	818
M[illegible]							
[illegible]	Gen	Part	14	5	8	177	583
McComb, [illegible]—Pike							
McComb City Hospital....	Gen	NPAssn	28	21	7	305	1,781
[illegible]....	Gen	NPAssn	50	31	6	274	2,205
[illegible]	Gen	NPAssn	66	48	16	469	3,100
[illegible]	Ment	State	837	746	..	...	160
[illegible]	N&M	Indiv	37	13	..	...	325
[illegible] Hospital...............	Gen	Indiv	14	5	4	14	380
Matty Hersee Hospital◇.......	Gen	State	100	68	14	526	3,070
Meridian Public Health Treatment Center...........	Ven	State	500	400	10	.	14,999
Riley's Hospital	Gen	NPAssn	45	37	10	223	2,344
Rush Memorial Hospital▲◇....	Gen	NPAssn	92	62	16	129	3,290
St. Joseph Hospital◇..........	Gen	Church	40	28	11	274	1,676
Morton, 1,665—Scott							
Scott County Hospital.......	Gen	Indiv	22	8	8	195	838
Mound Bayou, 1,325—Bolivar							
Taborian Hospital............	Gen	NPAssn	52	56	6	174	1,972
Natchez, 22,678—Adams							
Natchez General Hospital	Gen	Indiv	60	33	10	206	2,103
[illegible]	Gen	NPAssn	35	22	8	251	1,060
N[illegible]							
New Albany Hospital and Clinic.............................	Gen	NPAssn	15	7	2	44	352
Shands Hospital....	Gen	NPAssn	52	26	10	432	1,900
Newton, 2,888—Newton							
Newton Hospital.............	Gen	NPAssn	25	17	6	203	1,397
Oxford, 3,948—Lafayette							
Bramlett Hospital............	Gen	Indiv	48	18	10	119	914
Oxford Hospital..	Gen	Corp	30	23	5	183	1,616
Pascagoula, 10,797—Jackson							
Jackson County Hospital	Gen	County	85	31	25	525	2,403
Philadelphia, 4,469—Neshoba							
Choctaw Hospital............	Gen	IA	35	20	7	64	782
Pontotoc, 1,603—Pontotoc							
Pontotoc Clinic Hospital......	Gen	Part	19	9	3	221	954
Ripley, 2,374—Tippah							
Tippah County Hospital......	Gen	County	40	...	6	Estab.	1950
Rosedale, 2,182—Bolivar							
Dr. Nobles' Clinic-Hospital....	Gen	Indiv	25	17	1	25	650
Rosedale-Bolivar County Hospital......................	Gen	City	18	8	4	35	325
[illegible]							
[illegible]▲..	TB	State	457	405	..	...	470
Starkville, 7,116—Oktibbeha							
J. W. Eckford Memorial Clinic-Hospital......................	Gen	Indiv	18	10	8	379	907
State College, 300—Oktibbeha							
James Z. George Memorial Hospital....................	Inst	State	40	2	..	...	544
Tunica, 1,354—Tunica							
Tunica County Hospital.......	Gen	County	28	...	8	Estab.	1950
Tupelo, 11,507—Lee							
North Mississippi Community Hospital▲....................	Gen	NPAssn	70	69	10	743	4,587
Tylertown, 1,334—Walthall							
Pittman Hospital.............	Gen	Corp	39	22	10	234	1,395
Walthall Hospital............	Gen	NPAssn	42	19	6	329	1,622
Union, 1,554—Newton							
Laird Hospital................	Gen	NPAssn	30	19	12	303	1,390
Vicksburg, 27,344—Warren							
Lutheran Hospital+▲◇.........	Gen	Church	100	86	12	151	3,126
Mercy Hospital-Street Memorial★+▲◇...............	Gen	Church	125	91	17	377	4,058
Mississippi State Charity Hospital.....................	Gen	State	75	54	8	207	2,021
[illegible]▲	Gen	NPAssn	57	35	16	136	1,295
Wa[illegible]							
[illegible]	Gen	Part	25	9	5	57	550
West Point, 6,423—Clay							
Flowers Hospital.............	Gen	Part	33	11	8	213	1,135
Whitfield, 300—Rankin							
Mississippi State Hospital▲....	Ment	State	4,305	4,290	..	...	2,308
Yazoo City, 9,741—Yazoo							
Kings Daughters Hospital.....	Gen	NPAssn	31	20	12	294	1,878
Yazoo Clinic and Hospital.....	Gen	Part	20	6	2	10	245

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ellisville, 3,562—Jones							
Ellisville State School.........	McDe	State	596	589	..	...	248
Jackson, 97,674—Hinds							
Z. T. Hubert Health Center of Jackson College...........	Gen	NPAssn	25	7	5	108	671

MISSOURI

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aurora, 4,155—Lawrence							
Aurora Hospital..............	Gen	City	20	11	5	239	669
Bethany, 2,705—Harrison							
Bethany Hospital and Clinic..	Gen	Indiv	20	9	7	101	565
Bonne Terre, 3,524—St. Francois							
Bonne Terre Hospital▲...	Gen	NPAssn	45	36	15	604	2,121
Boonville, 6,729—Cooper							
St. Joseph's Hospital▲.........	Gen	Church	99	50	20	363	2,285
Branson, 1,320—Taney							
Skaggs Community Hospital..	Gen	NPAssn	24	...	8	Estab.	1950
California, 2,623—Moniteau							
Latham Sanitarium...	Gen	Indiv	33	13	9	135	544
Cape Girardeau, 21,539—Cape Girardeau							
St. Francis Hospital▲...	Gen	Church	112	88	27	947	3,979
Southeast Missouri Hospital...	Gen	NPAssn	72	59	20	501	2,862
Carrollton, 4,369—Carroll							
Atwood Hospital..............	Gen	Indiv	16	10	3	82	338
Bales Hospital................	Gen	Indiv	12	7	4	51	341
Staton Clinic-Hospital.........	Gen	Indiv	16	6	7	45	320
Carthage, 11,150—Jasper							
McCune-Brooks Hospital▲.....	Gen	City	50	32	14	422	1,837
Clayton, 15,925—St. Louis							
St. Louis County Hosp.★+▲...	Gen	County	216	116	32	592	3,573
Clinton, 6,069—Henry							
Clinton General Hospital......	Gen	Corp	32	18	8	169	977
Columbia, 31,731—Boone							
Boone County General Hospital▲...	Gen	County	52	38	10	439	1,876
Ellis Fischel State Cancer Hospital+▲	Cancer	State	104	88	..	...	1,385
Noyes Hospital.	Unit of University Hospitals						
Parker Memorial Hospital.....	Unit of University Hospitals						
State Hospital for Crippled Children.....	Unit of University Hospitals						
University Hospitals+▲	Gen	State	100	62	12	368	3,347
Excelsior Springs, 5,522—Clay							
Excelsior Springs Sanitarium and Hospital..	Gen	NPAssn	40	35	12	209	1,056
Veterans Admin. Hospital+▲..	TB	Vet	251	202	..	...	383
Fairfax, 813—Atchison							
Fairfax Community Hospital..	Gen	NPAssn	34	13	14	114	669
Farmington, 4,479—St. Francois							
State Hospital No. 4▲.... .	Ment	State	1,713	1,906	..	...	593
Fayette, 3,117—Howard							
Lee Hospital..........	Gen	Part	35	31	7	112	1,353
Fort Leonard Wood,—Pulaski							
U. S. Army Hospital..........	Gen	Army	500	...		Reopened	1950
Fulton, 10,010—Callaway							
State Hospital No. 1+▲........	Ment	State	2,590	2,584	..	...	529
Hannibal, 20,540—Marion							
Levering Hospital............	Gen	City	129	96	21	375	4,152
St. Elizabeth's Hospital.......	Gen	Church	100	86	25	519	4,293
Harrisonville, 2,530—Cass							
Memorial Hospital............	Gen	NPAssn	30	21	10	173	1,167
Humansville, 786—Polk							
George Dimmitt Memorial Hospital	Gen	NPAssn	20	7	7	134	1,410
In[illegible]							
[illegible]▲	Gen	Church	141	112	36	1,206	7,509

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Rural Jackson County Emergency Hospital	Gen	County	30	25	5	96	764
Ironton, 1,144—Iron							
Arcadia Valley Hospital (St. Mary's of the Ozarks)	Gen	Church	28	30	12	372	1,496
Jefferson Barracks, 842—St. Louis							
Veterans Admin. Hospital+▲	Gen	Vet	676	586	..	...	8,955
Jefferson City, 24,990—Cole							
Missouri State Penitentiary Hospital▲	Inst	State	244	76	..	..	896
St. Mary's Hospital▲	Gen	Church	125	101	20	926	4,393
Joplin, 38,515—Jasper							
Freeman Methodist Hospital▲	Gen	Church	80	56	20	429	2,771
St. John's Hospital▲◇	Gen	Church	150	87	26	788	4,706
Kansas City, 453,290—Jackson							
Children's Mercy Hospital+▲⊙	Chil	NPAssn	145	130	..	...	2,508
Fairmount Maternity Hosp.	Mat	Corp	60	36	36	158	173
Kansas City General Hospital No. 1★+▲◇	Gen	City	550	406	50	861	11,180
Kansas City General Hospital No. 2★+▲◇	Gen	City	264	183	29	727	3,939
Kansas City Tuberculosis Hospital+▲	TB	City	246	216	..	..	222
Major Clinic and Hospital	N&M	Indiv	35	13	..	..	95
Menorah Hospital★+▲	Gen	NPAssn	160	159	26	401	6,635
Municipal Contagious Disease Hospital	Unit of Kansas City General Hospital No. 1						
Neurological Hospital	N&M	NPAssn	75	79	..	...	1,003
Ralph Sanitarium	Drug	Part	25	14		..	453
Research Hospital★+▲◇	Gen	NPAssn	250	240	44	1,415	7,817
St. Joseph Hospital★+▲◇	Gen	Church	321	297	42	2,272	13,150
St. Luke's Hospital★+▲◇	Gen	Church	377	335	53	1,952	11,121
St. Mary's Hospital★+▲◇	Gen	Church	300	172	40	1,194	7,446
St. Vincent's Hospital▲	*Mat*	*Church*	*36*	*14*	*30*	*632*	*811*
Trinity Lutheran Hospital★▲◇	Gen	Church	145	126	33	1,189	5,638
Willows Maternity Sanitarium	Mat	Corp	60	43	55	153	171
Kirksville, 10,948—Adair							
Grim-Smith Memorial Hosp.	Gen	Corp	52	35	14	313	2,058
Stickler Hospital	Gen	Corp	25	12	6	27	370
Kirkwood, 18,587—St. Louis City							
U. S. Marine Hospital▲	Gen	USPHS	127	119	..	...	1,295
Koch, 900—St. Louis							
Robert Koch Hospital+▲⊙	TB	City	650	522	..	...	486
Lamar, 3,234—Barton							
Memorial Hospital	Gen	County	30	13	11	167	652
Lebanon, 6,752—Laclede							
Louise G. Wallace Hospital	Gen	NPAssn	57	34	16	384	1,944
Lockwood, 841—Dade							
Lockwood Memorial Hospital	Gen	NPAssn	14	4	6	44	247
Louisiana, 4,379—Pike							
Pike County Hospital▲	Gen	County	57	50	10	239	1,897
Malden, 3,382—Dunklin							
Bailey Hospital and Clinic	Gen	Indiv	8	2	3	49	106
Marceline, 3,150—Linn							
St. Francis Hospital	Gen	Church	17	15	8	206	776
Marshall, 8,819—Saline							
Georgia Brown Blosser Home for Crippled Children	Orth	NPAssn	42	27	..	...	124
John Fitzgibbon Memorial Hospital	Gen	NPAssn	50	37	12	323	1,778
Maryville, 6,814—Nodaway							
St. Francis Hospital▲	Gen	Church	80	59	20	698	3,752
Mexico, 11,611—Audrain							
Audrain Hospital▲	Gen	County	51	48	14	420	2,230
▲	Indus	NPAssn	35	28	.	...	573
Clinic▲	Gen	Corp	44	34	10	291	1,927
Monett, 4,777—Barry							
St. Vincent Hospital	Gen	Church	20	18	8	360	959
Mount Vernon, 2,079—Lawrence							
Missouri State Sanatorium▲	TB	State	650	470	..	. .	559
Neosho, 5,780—Newton							
Sale Memorial Hospital and Clinic	*Gen*	*Indiv*	*40*	*24*	*18*	*289*	*1,799*
Nevada, 7,986—Vernon							
Nevada City Hospital	Gen	City	37	35	7	342	1,568
State Hospital No. 3▲	Ment	State	2,100	2,004	..	...	371
Ozark, 961—Christian							
Haguewood Hospital	Gen	Indiv	10	6	4	240	1,020
Poplar Bluff, 15,120—Butler							
Brandon Hospital	Gen	Indiv	•45	23	4	64	730
Doctors Hospital	Gen	Part	55	54	14	423	3,073
Lucy Lee Hospital	Gen	Indiv	50	35	13	322	2,651
Poplar Bluff Hospital	Gen	Part	85	62	20	495	3.697
Veterans Admin. Hospital	Gen	Vet	200	...	..	Estab. 1950	
Princeton, 1,503—Mercer							
Lambert Hospital	Gen	Corp	15	9	4	46	360
Robertson, 300—St. Louis							
Jewish Sanatorium	Chr	NPAssn	81	81	..	...	40
Rolla, 9,313—Phelps							
Missouri Trachoma Hospital	Trach	State	55	35	..	...	431
St. Charles, 14,307—St. Charles							
St. Joseph's Hospital▲	Gen	Church	100	81	24	976	3,866
St. Joseph, 75,572—Buchanan							
Missouri Methodist Hosp.★+▲◇	Gen	Church	300	178	30	748	7,466
St. Joseph's Hospital★▲◇	Gen	Church	148	111	35	1,035	5,980
State Hospital No. 2+▲	Ment	State	2,550	2,504	..	...	243
St							
▲	Gen	Church	170	156	..	...	3,057
Hospital+▲	SkCancer	NPAssn	42	38	..	...	1,006
Barnes Hospital★+▲◇	Gen	NPAssn	601	519	..	...	16,773
Bethesda General Hospital▲	Gen	NPAssn	100	57	20	361	1,307
Christian Hospital★▲	Gen	NPAssn	125	95	35	1,015	4,000

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
De Paul Hospital★+▲◇	Gen	Church	267	207	62	2,416	8,851
Evangelical Deaconess Hospital★▲◇	Gen	Church	257	230	40	1,491	8,612
Faith Hospital	Gen	NPAssn	35	24	12	231	1,233
Firmin Desloge Hospital★+▲⊙	Unit of St. Mary's Group of Hospitals						
Frisco Employes' Hospital▲	Indus	NPAssn	80	59	..	...	1,791
Homer G. Phillips Hosp.★+▲◇	Gen	City	694	662	73	2,925	14,403
Incarnate Word Hospital▲	Gen	Church	48	37	20	681	2,217
Jewish Hospital★+▲◇	Gen	NPAssn	298	252	42	1,307	8,577
Lutheran Hospital★▲◇	Gen	Church	165	149	30	1,139	6,154
Marian Hospital	Gen	NPAssn	23	19	..	...	921
McMillan Hospital▲⊙	Unit of Barnes Hospital						
Midwestern Medical Center	Ven	USPHS	168	47	..	...	2,352
Missouri Baptist Hosp.★+▲◇	Gen	Church	450	374	50	1,034	12,233
Missouri Pacific Hospital+▲	Indus	NPAssn	325	214	..	...	7,093
Mount St. Rose Sanat.+▲⊙	Unit of St. Mary's Group of Hospitals						
Park Lane Memorial Hospital	Gen	NPAssn	125	68	30	385	2,194
Peoples Hospital▲	Gen	NPAssn	83	74	20	499	2,703
St. Ann's Maternity Hospital	Mat	Church	26	2	34	39	33
St. Anthony's Hospital★+▲	Gen	Church	250	213	75	2,598	8,047
St. John's Hospital★+▲◇	Gen	Church	357	304	65	2,204	10,102
St. Louis Children's Hosp.+▲⊙	Chil	NPAssn	136	106	..	....	3,405
St. Louis City Hospital★+▲◇	Gen	City	1,059	834	66	1,105	16,860
St. Louis Maternity Hospital+▲⊙	MatGyn	NPAssn	142	120	125	3,189	4,933
St. Louis State Hospital+▲⊙	Ment	State	3,500	3,392	..	..	331
St. Luke's Hospital★+▲◇	Gen	Church	184	160	36	976	5,369
St. Mary's Group of Hospitals★+▲◇	GenTb	Church	728	751	98	4,395	21,093
St. Mary's Hospital★+▲◇	Unit of St. Mary's Group of Hospitals						
St. Mary's Infirmary★▲◇	Gen	Church	138	107	37	987	3,659
St. Vincent's Sanitarium▲⊙	N&M	Church	250	217	..	...	440
Shriners Hospital for Crippled Children+▲⊙	Orth	NPAssn	120	117	..	...	235
Salem, 3,620—Dent							
Hart Hospital	Gen	Indiv	15	6	6	150	455
Sedalia, 20,269—Pettis							
John H. Bothwell Memorial Hospital▲	Gen	City	100	56	22	577	2,419
Sikeston, 11,663—Scott							
Missouri Delta Community Hospital	Gen	NPAssn	49	35	13	731	2,301
	Gen	NPAssn	30	20	12	99	973
Springfield, 66,302—Greene							
▲	Gen	NPAssn	131	89	27	799	4,110
	Gen	City	20	14	6	182	950
▲	Inst	Fed	1,142	674	..	...	530
St. John's Hospital▲◇	Gen	Church	140	121	28	1,244	6,211
Springfield Baptist Hosp.▲◇	Gen	NPAssn	100	80	14	510	4,414
Veterans Admin. Hospital▲	TB	Vet	600	425	..	...	1,733
Sweet Springs, 1,439—Saline							
Jones Clinic Hospital	Gen	Indiv	10	...	2	...	...
Trenton, 6,110—Grundy							
	Gen	Indiv	24	16	6	85	691
	Gen	NPAssn	21	8	4	108	758
	Gen	Corp	34	30	6	...	1,690
	Gen	Church	115	74	20	876	3,233
Waverly, 876—Lafayette							
Kelling Clinic and Hospital	Gen	Part	11	6	5	37	313
▲	Gen	State	47	24	13	337	1,560
Hospital	TB	County	110	72	..	...	127
Webster Groves, 23,289—St. Louis							
Glenwood Sanatorium	N&M	Corp	72	46	..	...	268
West Plains, 4,923—Howell							
Christa Hogan Hospital	Gen	Indiv	18	8	8	166	622

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Columbia, 31,731—Boone							
Stephens College Infirmary	Inst	NPAssn	78	18	..	...	2,783
Kansas City, 453,290—Jackson							
Florence Crittenton Home	Mat	NPAssn	15	17	16	54	65
Florence Home for Colored Girls	Mat	NPAssn	31	14	19	42	69
Trowbridge Training School for Nervous and Backward Children	MeDe	Indiv	35	31	..	...	35
Liberty, 4,717—Clay							
Missouri Odd Fellows Home Hospital	Inst	NPAssn	60	48	..	...	55
Marshall, 8,819—Saline							
	MeDe	State	1,996	1,763	..	...	104
	MeDe	Church	100	90	..	...	10
Rolla, 9,313—Phelps							
Missouri School of Mines Hospital	Inst	State	21	1	..	...	205
St. Charles, 14,307—St. Charles							
Evangelical Emmaus Home for Epileptics and Feebleminded	MeDe	Church	150	145	..	...	13
St. James, 1,803—Phelps							
State Federal Soldiers Home Hospital	Inst	State	60	50	..	...	165
▲	Gen	Church	60	35	30	543	1,002
	Chr	City	1,475	1,370	..	...	513

Key to symbols and abbreviations is on page 124

MISSOURI—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]	Inst	NPAssn	123	66	..	...	264
[illegible]	Chr	Church	80	74	..	...	85
[illegible] School	McDe	State	525	518	..	...	64
Webster Groves, 23,289—St. Louis							
Miriam Rose Bry Convalescent Home	Conv	NPAssn	37	24	..	...	202

MONTANA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]—Deer Lodge							
[illegible]	Gen	Church	75	60	15	316	1,993
[illegible]rass							
[illegible]	Gen	NPAssn	12	...	4	Estab. 1950	
[illegible]	Gen	Church	90	78	26	962	4,252
[illegible]	enOrth	Church	185	148	30	987	6,895
[illegible]	Gen	Church	82	54	14	550	2,654
[illegible]	Gen	IA	43	25	8	167	1,115
[illegible]	Gen	Corp	110	74	20	330	3,108
St. James Hospital★▲◇	Gen	Church	160	118	30	781	5,179
Silver Bow County Hosp.	InstGen	County	110	83	7	14	393
Choteau, 1,615—Teton							
Choteau Hospital	Gen	Indiv	19	14	3	20	233
Conrad, 1,854—Pondera							
St. Mary's Hospital	Gen	Church	56	30	10	224	1,267
Crow [illegible]							
Cro[illegible]	Gen	IA	36	28	4	145	1,189
Deer [illegible]							
Montana State Tuberculosis Sanitarium▲⊙	TB	State	235	203	..	...	226
St. Joseph Hospital	Gen	Church	50	32	10	150	859
Forsyth, 1,884—Rosebud							
Rosebud Community Hospital	Gen	Church	29	15	8	97	707
Fort Benton, 1,508—Chouteau							
St. Clare Hospital	Gen	Church	42	34	7	75	507
Fort Harrison, 300—Lewis and Clark							
Veterans Admin. Center▲	*Gen*	*Vet*	*264*	*193*	..	...	*1,874*
Glasgow, 3,810—Valley							
Frances Mahon Deaconess Hospital	Gen	Church	60	37	15	372	2,201
[illegible]	Gen	County	40	7	6	58	248
[illegible]	Gen	NPAssn	57	40	12	260	2,263
Great Falls, 39,006—Cascade							
Columbus Hospital▲◇	Gen	Church	253	143	50	1,000	7,284
Montana Deaconess Hospital★+▲◇	Gen	Church	200	126	40	689	6,182
Hamilton, 2,669—Ravalli							
Marcus Daly Memorial Hosp.	Gen	NPAssn	40	20	12	269	1,281
Harlem, 1,103—Blaine							
Fort Belknap Indian Hospital and Sanatorium	Gen	IA	47	20	8	170	894
Havre, 8,094—Hill							
Kennedy Deaconess Hospital▲	Gen	Church	62	36	14	309	1,983
Sacred Heart Hospital▲◇	Gen	Church	125	66	20	378	2,851
Helena, 17,498—Lewis and Clark							
St. John's Hospital▲◇	Gen	Church	85	49	20	...	2,562
St. Peter's Hospital▲	Gen	NPAssn	58	46	12	345	2,175
Shodair Crippled Children's Hospital▲	Orth	NPAssn	26	13	25	...	218
Jordan, 500—Garfield							
Lutheran Hospital	Gen	Church	22	17	4	57	255
Kalispell, 9,694—Flathead							
Kalispell General Hospital▲	Gen	Church	88	36	12	535	2,679
[illegible]							
[illegible]	Gen	Church	120	70	18	496	4,348
[illegible]	Gen	Church	15	12	4	156	492
Livingston, [illegible]—Park							
Lott Hospital	Gen	Part	32	22	6	141	1,394
Park Hospital	Gen	Part	30	17	6	162	1,081
Miles City, 9,184—Custer							
Miles City Hospital (Holy Rosary Hospital)▲◇	Gen	Church	200	107	25	552	4,638
Missoula, 22,320—Missoula							
[illegible]	Gen	NPAssn	42	36	12	322	1,990
[illegible]	Indus	NPAssn	85	56	..	...	2,072
[illegible]	Gen	Church	160	131	20	717	4,773
[illegible]	Gen	Church	31	17	8	159	878
[illegible]	Gen	IA	23	12	7	108	690
[illegible]	Gen	Church	50	29	6	221	1,901
[illegible]—Richland							
Community Memorial Hosp.	Gen	NPAssn	78	32	15	385	2,204
Terry, 1,179—Prairie							
Lutheran Good Samaritan Hospital	Gen	Church	17	6	7	66	333
[illegible]	Gen	Corp	32	23	6	141	1,022
[illegible]	Ment	State	1,950	1,887	..	...	671
[illegible]	Gen	NPAssn	33	24	9	283	1,294

MONTANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Wolf Point, 2,547—Roosevelt							
Trinity Hospital	Gen	NPAssn	27	15	10	175	798

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Chester, 548—Liberty							
Liberty County Hospital	Gen	County	8	1	5	11	201
[illegible]							
[illegible]	Gen	Church	18	10	6	88	696
[illegible]							
Big Horn County Community Hospital	Gen	NPAssn	24	12	6	152	488
[illegible]							
[illegible] Hospital	InstGen	County	100	59	3	...	162
Scobey, 1,623—Daniels							
Clinic Hospital	Gen	Indiv	15	7	3	33	205

NEBRASKA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ainsworth, 2,142—Brown							
Ainsworth Clinic and Hospital	Gen	Part	28	16	5	206	1,215
Albion, 2,106—Boone							
Boone County Community Hospital	Gen	County	20	6	8	44	213
Alliance, 7,852—Box Butte							
St. Joseph's Hospital▲◇	Gen	Church	105	55	20	443	2,281
Auburn, 3,398—Nemaha							
Auburn Hospital	Gen	Indiv	16	10	6	114	476
[illegible]	Gen	Indiv	15	6	5	54	304
[illegible]	Gen	Part	28	13	8	86	527
Bassett, 1,065—Rock							
Bassett Hospital	Gen	Part	26	11	9	74	550
Beatrice, 11,788—Gage							
Lutheran Hospital▲	Gen	Church	76	39	18	406	1,965
Mennonite Deaconess Home and Hospital	Gen	Church	32	28	10	185	980
Benkelman, 1,503—Dundy							
Morehouse Hospital	Gen	Corp	14	8	5	99	618
Blair, 3,800—Washington							
Blair Hospital	Gen	Indiv	14	11	4	175	572
Broken Bow, 3,406—Custer							
Broken Bow Hospital	Gen	Indiv	50	26	10	64	987
Cambridge, 1,342—Furnas							
Republican Valley Hospital	Gen	Indiv	20	6	5	58	264
Chadron, 4,645—Dawes							
Chadron Municipal Hospital	Gen	City	28	14	8	186	864
Columbus, 8,844—Platte							
Lutheran Hospital	Gen	Church	30	20	7	279	1,191
St. Mary Hospital▲	Gen	Church	138	62	15	473	3,085
Crawford, 1,806—Dawes							
Community Memorial Hosp.	Gen	Church	18	...	5	Estab. 1950	
Crete, 3,682—Saline							
Crete Municipal Hospital	Gen	City	26	...	8	Estab. 1950	
Dalton, 358—Cheyenne							
Pioneer Memorial Hospital	Gen	Indiv	16	10	5	66	426
David City, 2,312—Butler							
David City Hospital	Gen	NPAssn	18	11	8	183	706
Fairbury, 6,385—Jefferson							
Fairbury Clinic and Hospital	Gen	Part	8	4	4	97	255
Fairbury Hospital	Gen	Indiv	40	20	12	193	863
Falls City, 6,193—Richardson							
Our Lady of Perpetual Help Hospital	Gen	Church	26	18	8	267	911
Fren[illegible]							
Dc[illegible] Hospital	Gen	County	75	45	22	637	2,225
Friend, 1,137—Saline							
Warren Memorial Hospital	Gen	City	30	28	6	103	247
Genoa, 1,007—Nance							
Emergency Hospital	Gen	Indiv	10	3	3	53	306
Genoa Hospital	Gen	Indiv	12	5	3	49	198
Gordon, 2,047—Sheridan							
Gordon Hospital	Gen	Part	14	9	8	225	700
Grand Island, 22,835—Hall							
Grand Island Lutheran Hosp.	Gen	Church	33	14	10	291	1,243
St. Francis Hospital▲◇	Gen	Church	150	109	24	655	4,540
Veterans Admin. Hospital	Gen	Vet	202	...	..	Estab. 1950	
Hastings, 20,108—Adams							
Mary Lanning Memorial Hospital▲◇	Gen	NPAssn	138	88	25	887	4,198
Hebron, 1,990—Thayer							
Thayer County Memorial Hospital	Gen	Church	26	7	11	75	446
Henderson, 495—York							
Henderson Community Hosp.	Gen	NPAssn	13	...	6	Estab. 1950	
Holdredge, 4,367—Phelps							
Brewster Hospital	Gen	Corp	60	27	15	192	1,425
[illegible]	Gen	Indiv	22	16	5	123	877
[illegible]	Gen	Indiv	34	25	8	127	563
Imperial, [illegible]—Chase							
Imperial Community Hospital	Gen	Corp	18	10	7	116	910
Ingleside, 1,699—Adams							
Hastings State Hospital+▲⊙	Ment	State	1,800	1,774	..	...	791
Kearney, 12,106—Buffalo							
[illegible]▲	Gen	Church	94	43	20	569	2,724
[illegible]▲	TB	State	225	174	..	...	196
[illegible] Hospital	Gen	County	25	...	8	Estab. 1950	

NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Lewellen, 532—Garden							
Lewellen Community Hospital	Gen	NPAssn	16	10	4	60	566
Lexington, 5,061—Dawson							
Lexington Community Hosp...	Gen	NPAssn	23	20	8	372	1,271
Lincoln, 97,423—Lancaster							
Bryan Memorial Hospital★▲◇..	Gen	Church	135	98	20	559	4,059
Dr. Benj. F. Bailey Sanatorium..	N&M	Corp	115	115	..		355
Lincoln General Hosp.★+▲◇...	Gen	NPAssn	183	164	40	1,021	5,503
Lincoln State Hospital▲.	Ment	State	1,700	1,498	..	...	341
Nebraska Orthopedic Hosp.+▲.	Orth	State	110	68	.	..	850
St. Elizabeth Hospital★+▲◇.. .	Gen	Church	220	181	30	1,489	8,190
Veterans Admin. Hospital+▲..	Gen	Vet	300	254	..	.	3,551
Loup City, 1,505—Sherman							
Sacred Heart Hospital........	Gen	Church	28	18	10	183	1,016
Lynch, 487—Boyd							
Sacred Heart Hospital.	Gen	Church	22	17	8	153	753
McCook, 7,642—Red Willow							
St. Catherine of Sienna Hospital▲...	Gen	Church	100	55	28	656	2,775
Nebraska City, 6,851—Otoe							
St. Mary's Hospital▲..	Gen	Church	60	52	15	403	2,127
Norfolk, 11,231—Madison							
Lutheran Hospital	Gen	Church	57	44	20	526	2,228
Norfolk State Hospital+▲..	Ment	State	1,250	1,204	.		212
Our Lady of Lourdes Hospital.	Gen	Church	67	46	18	389	2,160
North Platte, 15,390—Lincoln							
North Platte Memorial Hosp..	Gen	Church	35	22	10	261	1,341
St. Mary Hospital▲..	Gen	Church	74	50	17	404	2,558
Oakland, 1,450—Burt							
Oakland Memorial Hospital...	Gen	Church	24	...	6	Estab. 1950	
Odell, 404—Gage							
Odell General Hospital	Gen	Indiv	11	6	5	56	449
Ogallala, 3,441—Keith							
Ogallala Hospital	Gen	Indiv	16	10	7	164	643
Omaha, 247,408—Douglas							
Bishop Clarkson Memorial Hospital★+▲◇ .	Gen	Church	170	153	18	651	6,599
Children's Memorial Hosp.▲⊙..	Chil	NPAssn	94	72	18	...	3,315
Creighton Memorial St. Joseph's Hospital★+▲◇..	Gen	Church	450	430	50	2,042	13,143
Doctors Hospital .	Gen	NPAssn	105	85	16	498	5,366
Douglas County Hospital▲⊙..	Gen	County	300	239	..	.	3,871
Douglas County Psychiatric Hospital⊙ . .	Unit of Douglas County Hospital						
Immanuel Deaconess Institute★▲◇	Gen	Church	123	97	39	1,114	4,796
Lutheran Hospital+▲. . ..	Gen	Church	139	117	13	407	4,697
Nebraska Methodist Hospital★+▲◇ . .	Gen	Church	174	128	24	818	6,373
St. Catherine's Hospital★▲◇	Gen	Church	165	138	36	1,521	6,401
U. S. Air Force Hospital . ..	Gen	USAF	100	51	11	302	1,819
University of Nebraska Hospital★+▲◇.. .	Gen	State	197	146	15	599	3,465
Veterans Admin. Hospital ..	Gen	Vet	80	...	..	Estab. 1951	
Ord, 2,242—Valley							
Ord Cooperative Hospital...	Gen	Corp	28	6	10	66	428
Osceola, 1,065—Polk							
St. Francis Hospital	Gen	Church	14	7	5	46	332
Osmond, 796—Pierce							
St. Joseph Hospital	Gen	Church	18	8	10	159	512
Pawnee City, 1,595—Pawnee							
Pawnee County Hospital . ..	Gen	County	25	15	6	119	489
Pender, 1,167—Thurston							
Logan Valley Hospital	Gen	Indiv	14	9	6	100	353
Scottsbluff, 12,933—Scotts Bluff							
St. Mary Hospital	Gen	Church	100	38	20	495	2,533
West Nebraska Methodist Hospital▲◇	Gen	Church	94	55	20	635	3,562
Seward, 3,174—Seward							
Memorial Hospital	Gen	NPAssn	33	...	15	Estab. 1950	
Sidney, 4,894—Cheyenne							
Sidney Hospital	Gen	Part	30	13	10	238	1,092
Taylor Hospital	Gen	Indiv	17	12	7	204	858
Stratton, 630—Hitchcock							
Dr. Stewart's Private Hospital	Gen	Indiv	14	7	5	44	253
	Gen	Indiv	20	11	8	106	528
Brodstone Memorial Hospital..	Gen	NPAssn	24	14	8	165	716
Sutherland, 862—Lincoln							
Sutherland Hospital..........	Gen	NPAssn	19	10	8	100	465
Tecumseh, 1,939—Johnson							
	Gen	Indiv	13	6	8	112	369
	Gen	NPAssn	16	12	9	194	882
	Gen	Indiv	25	16	7	223	1,747
Wahoo, 3,055—Saunders							
Wahoo Community Hospital..	Gen	Indiv	20	12	10	151	670
Wayne, 3,562—Wayne							
Benthack Hospital............	Gen	Indiv	25	10	8	142	507
Westpoint, 2,664—Cuming							
Memorial Hospital	Gen	Church	75	18	15	357	1,024
Winnebago, 800—Thurston							
Winnebago Indian Hospital....	Gen	IA	54	16	9	96	737
York, 6,189—York							
York General Hospital	Gen	NPAssn	46	30	12	349	1,544

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Beatrice, 11,788—Gage							
Beatrice State Home..........	MeDe	State	1,725	1,675	..	...	54
Bridgeport, 1,620—Morrill							
Morrill County Veterans Memorial Hospital	Gen	NPAssn	14	6	7	135	415
Lincoln, 97,423—Lancaster							
Nebraska State Penitentiary Hospital........	Inst	State	21	3	..	...	821
Student Health Center........	Inst	State	22	6	..	...	653
Minden, 2,106—Kearney							
Seeley Memorial Mercy Hospital...	Gen	Church	18	7	8	182	644
Omaha, 247,408—Douglas							
Booth Memorial Hospital......	Mat	Church	45	27	25	112	122
Bramwell Booth Convalescent Hospital.................. ...	Conv	Church	55	55	..	...	32
Hattie B. Munroe Home for Convalescing Crippled Children....................	Orth	NPAssn	30	22	..	...	48
Orchard, 493—Antelope							
Orchard Hospital.............	Gen	Indiv	7	1	3	21	80
Oshkosh, 1,111—Garden							
Oshkosh Hospital............	Gen	City	24	9	3	75	482
Plainview, 1,402—Pierce							
Plainview General Hospital....	Gen	NPAssn	25	13	8	166	726
Red Cloud, 1,672—Webster							
	Gen	City	16	6	7	142	395
	Gen	Church	10	6	5	76	267
	Gen	NPAssn	23	7	8	136	399

NEVADA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Boulder City, 3,876—Clark							
Boulder City Hospital.........	Gen	Fed	23	14	6	118	852
Caliente, 1,800—Lincoln							
Lincoln County Hospital......	Gen	County	25	10	7	26	234
Carson City, 3,069—Ormsby							
Carson-Tahoe Hospital........	Gen	NPAssn	15	14	8	100	572
East Ely, 750—White Pine							
Steptoe Valley Hospital▲......	Gen	NPAssn	35	13	7	132	674
Elko, 5,389—Elko							
Elko General Hospital▲........	Gen	County	50	23	12	236	1,023
Henderson, 5,368—Clark							
Rose de Lima Hospital........	Gen	Church	42	20	8	136	1,301
Las Vegas, 24,418—Clark							
Clark County General Hosp..	Gen	County	134	85	30	522	3,489
Las Vegas Hospital..	Gen	Part	50	29	12	187	1,903
Lovelock, 1,613—Pershing							
Pershing County General Hospital......	Gen	County	26	5	3	41	888
Owyhee, 100—Elko							
Western Shoshone Hospital....	Gen	IA	20	9	4	71	383
Reno, 32,225—Washoe							
Nevada State Hospital for Mental Diseases...	Ment	State	370	366	..	...	155
St. Mary's Hospital+▲.........	Gen	Church	90	78	20	746	4,161
Veterans Admin. Center▲......	Gen	Vet	125	112	..	...	1,498
Washoe Medical Center▲.......	Gen	County	238	203	19	546	5,330
Schurz, 100—Mineral							
Walker River Indian Hospital.	Gen	IA	34	29	10	105	1,055
Winnemucca, 2,816—Humboldt							
Humboldt County General Hospital.....................	Gen	County	32	20	6	93	1,725

NEW HAMPSHIRE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Berlin, 16,545—Coos							
St. Louis Hospital▲◇..........	Gen	Church	88	58	17	447	2,509
Claremont, 12,058—Sullivan							
Claremont General Hospital▲..	Gen	NPAssn	52	39	16	381	2,466
Concord, 27,984—Merrimack							
Concord Hospital▲◇...........	Gen	NPAssn	148	104	25	839	4,649
Margaret Pillsbury Hospital...	Unit of Concord Hospital						
New Hampshire Memorial Hospital......	Unit of Concord Hospital						
New Hampshire State Hospital+▲◇................	Ment	State	2,659	2,530	..	...	985
Pembroke Sanatorium.........	TB	Corp	45	37	..	...	91
Dover, 15,911—Strafford							
Wentworth Hospital▲◇........	Gen	City	69	46	15	404	2,781
East Derry, 300—Rockingham							
Alexander-Eastman Hospital..	Gen	NPAssn	21	13	6	175	721
Exeter, 5,652—Rockingham							
Exeter Hospital▲.............	Gen	NPAssn	76	50	17	563	2,289
Franklin, 6,551—Merrimack							
Franklin Hospital▲...........	Gen	NPAssn	50	29	15	223	1,539
Glencliff, 200—Grafton							
New Hampshire State Sanat.▲.	TB	State	88	81	..	...	85
Grasmere, 200—Hillsboro							
Hillsborough County General Hospital▲◇....	Gen	County	94	55	16	190	1,425
Hanover, 6,245—Grafton							
Mary Hitchcock Memorial Hospital★+▲◇...............	Gen	NPAssn	207	155	18	500	5,175
Keene, 15,631—Cheshire							
Elliot Community Hospital▲◇.	Gen	NPAssn	116	66	28	602	3,278
Laconia, 14,722—Belknap							
Laconia Hospital▲◇...........	Gen	NPAssn	124	80	25	468	3,359
Lancaster, 3,100—Coos							
Beatrice D. Weeks Memorial Hospital.......................	Gen	NPAssn	32	17	9	177	958

NEW HAMPSHIRE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Lebanon, 8,452—Grafton							
Alice Peck Day Memorial Hospital	Gen	NPAssn	30	12	10	306	556
Littleton, 4,768—Grafton							
Littleton Hospital	Gen	NPAssn	50	17	10	224	920
Manchester, 82,581—Hillsboro							
Balch Hospital	Unit of Elliot Hospital						
Elliot Hospital+▲◇	Gen	NPAssn	127	80	32	936	4,704
Notre Dame de Lourdes Hospital▲◇	Gen	Church	100	82	20	738	3,987
Our Lady of Perpetual Help Maternity Hospital	Unit of Sacred Heart Hospital						
Sacred Heart Hospital▲◇	Gen	Church	150	110	24	440	3,827
Veterans Admin. Hospital	Gen	Vet	150	...	..	Estab. 1950	
Nashua, 34,666—Hillsboro							
Nashua Memorial Hospital▲◇	Gen	NPAssn	84	60	16	582	3,137
St. Joseph's Hospital▲◇	Gen	Church	100	77	20	590	3,141
New London, 1,470—Merrimack							
New London Hospital	Gen	NPAssn	25	16	6	80	616
Newport, 5,047—Sullivan							
Carrie F. Wright Hospital	Gen	NPAssn	26	14	12	106	614
North Conway, 900—Carroll							
Memorial Hospital	Gen	NPAssn	35	24	12	196	945
Peterborough, 2,525—Hillsboro							
Monadnock Community Hospital▲	Gen	NPAssn	36	29	10	224	1,508
Plymouth, 3,008—Grafton							
Sceva Speare Memorial Hosp.	Gen	NPAssn	34	32	10	185	1,174
Portsmouth, 18,793—Rockingham							
Portsmouth Hospital▲	Gen	NPAssn	109	51	28	581	3,091
U. S. Naval Hospital▲	Gen	Navy	245	87	10	197	1,599
Rochester, 13,768—Strafford							
Frisbie Memorial Hospital▲	Gen	NPAssn	60	49	20	756	3,002
West Stewartstown, 350—Coos							
Coos County Hospital	Gen	County	42	27	5	154	810
Whitefield, 1,658—Coos							
Morrison Hospital	Gen	City	35	14	6	45	403
Wolfeboro, 2,559—Carroll							
Huggins Hospital▲	Gen	NPAssn	56	31	12	145	1,180
Woodsville, 1,900—Grafton							
Cottage Hospital	Gen	NPAssn	26	19	10	212	1,880
Grafton County Hospital	InstGen	County	30	20	4	8	79

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Exeter, 5,652—Rockingham							
Lamont Infirmary	Inst	NPAssn	54	17	..	...	983
Laconia, 14,722—Belknap							
Laconia State School	MeDe	State	720	713	..	...	48

NEW JERSEY

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Allentown, 766—Monmouth							
Dr. Farmer's Private Hospital	Gen	Indiv	40	18	10	75	804
Allenwood, 150—Monmouth							
Allenwood Sanatorium (Monmouth County Hospital ▲	TB	County	110	107	..	...	118
▲	Gen	NPAssn	253	189	40	1,599	8,368
Children's Seashore House at Atlantic City for Invalid Children	Orth	NPAssn	70	68	..	...	145
Bayonne, 76,657—Hudson							
Bayonne Hospital and Dispensary★+▲◇	Gen	NPAssn	220	142	30	1,089	6,057
	Gen	Corp	10	7	7	126	348
	N&M	Corp	65	53	..	...	71
▲	IsoTb	County	360	100	..	...	2,141
Hospital▲	Gen	County	250	158	..	...	829
	Ment	County	810	805	..	...	329
Hospital	TB	County	173	142	..	...	183
Bound Brook, 8,356—Somerset							
Bound Brook Hospital▲	Gen	NPAssn	38	16	10	72	573
	Gen	NPAssn	94	71	21	950	3,117
Tuberculosis Sanatorium▲	TB	NPAssn	122	113	..	...	91
Camden, 124,543—Camden							
Cooper Hospital★+▲◇	Gen	NPAssn	380	321	95	3,303	11,811
Municipal Hospital for Contagious Diseases+	Iso	City	90	12	..	...	363
West Jersey Hospital★+▲◇	Gen	NPAssn	270	204	50	1,976	8,410
Cape May Court House, 3,585—Cape May							
Burdette Tomlin Memorial Hospital	Gen	NPAssn	63	...	11	Estab. 1950	
Cedar Grove, 2,000—Essex							
Essex County Overbrook Hospital+▲○	Ment	County	2,735	2,654	..	...	848
Dover, 11,210—Morris							
Dover General Hospital▲	Gen	NPAssn	109	87	26	787	4,151
East Orange, 78,057—Essex							
East Orange General Hosp.▲◇	Gen	NPAssn	150	97	31	751	4,187
Elizabeth, 112,675—Union							
Alexian Brothers Hospital★▲	Gen	Church	166	131	..	...	3,250

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Elizabeth General Hospital and Dispensary★▲◇	Gen	NPAssn	202	160	40	1,849	7,566
St. Elizabeth Hospital★▲◇	Gen	Church	229	128	45	1,553	7,068
Englewood, 23,092—Bergen							
Englewood Hospital★+▲◇	Gen	NPAssn	190	154	48	2,035	6,757
Fort Dix, 1,000—Burlington							
U. S. Army Hospital▲	Gen	Army	685	394	42	628	8,978
Fort Monmouth,—Monmouth							
U. S. Army Hospital▲	Gen	Army	200	97	16	493	4,280
Franklin, 3,857—Sussex							
Franklin Hospital▲	Gen	NPAssn	37	22	7	231	1,146
Glen Gardner, 536—Hunterdon							
New Jersey Sanatorium for Tuberculous Diseases+▲	TB	State	339	284	..	...	243
Greystone Park,—Morris							
New Jersey State Hospital+▲⊙	Ment	State	6,056	5,890	..	...	1,908
Hackensack, 29,207—Bergen							
Hackensack Hospital★+▲◇	Gen	NPAssn	250	223	50	2,447	11,641
en							
▲	Orth	NPAssn	26	23	..	...	961
St. Mary's Hospital★▲◇	Gen	Church	420	264	30	819	6,698
▲	Gen	City	120	84	20	617	3,925
Berthold S. Pollak Hospital for Chest Diseases+▲	TB	County	503	394	..	..	901
Christ Hospital★▲◇	Gen	Church	330	178	50	997	6,340
Fairmount Hospital	Gen	NPAssn	59	45	15	237	1,697
Greenville Hospital▲	Gen	NPAssn	60	53	16	140	977
Jersey City Hospital★+▲◇	Gen	City	1,600	1,171	.	. .	24,884
Margaret Hague Maternity Hospital+▲⊙	Mat	County	345	210	385	8,886	10,546
St. Francis Hospital▲◇	Gen	Church	216	130	..	...	4,194
Kearny (Arlington P. O.), 39,828—Hudson							
West Hudson Hospital▲	Gen	NPAssn	62	45	20	474	2,519
Lakehurst, 1,492—Ocean							
U. S. Naval Air Station Infirmary	Gen	Navy	10	2	11	118	502
Lakewood, 8,000—Ocean							
Paul Kimball Hospital▲	Gen	NPAssn	62	61	12	588	2,941
Long Branch, 23,049—Monmouth							
Dr. E. C. Hazard Hospital	Gen	NPAssn	50	23	6	161	729
Monmouth Memorial Hospital★+▲◇	Gen	NPAssn	253	195	52	1,721	7,467
Lyons, 3,000—Somerset							
Veterans Admin. Hospital+▲⊙	Ment	Vet	2,140	2,415	..	...	531
Marlboro, 500—Monmouth							
New Jersey State Hospital+▲⊙	Ment	State	3,156	2,936	..	...	1,166
Metuchen, 9,858—Middlesex							
Roosevelt Hospital▲	TB	County	221	201	..	...	302
Millville, 16,116—Cumberland							
Millville Hospital	Gen	NPAssn	52	31	14	308	1,477
Montclair, 43,775—Essex							
Montclair Community Hosp.▲	Gen	NPAssn	54	42	15	471	2,052
Mountainside Hospital★+▲◇	Gen	NPAssn	305	226	61	1,565	8,326
St. Vincent's Hospital▲	Gen	Church	57	43	12	390	2,312
Morris Plains, 2,694—Morris							
	Card	NPAssn	24	21	..	...	54
▲	Gen	Church	121	90	35	1,064	3,920
Aurora Institute	Conv	Corp	90	20	..	...	250
▲	Gen	NPAssn	122	84	18	624	4,095
	TB	County	76	64	..	...	84
▲	Gen	NPAssn	110	84	24	1,050	3,402
▲	Gen	NPAssn	234	166	56	1,380	8,607
American Legion Memorial Hospital	Gen	NPAssn	35	28	15	262	1,435
Babies' Hospital-Coit Memorial+▲	Chil	NPAssn	87	38	7	...	2,615
Columbus Hospital▲	Gen	NPAssn	72	60	35	1,073	3,308
Community Hospital▲	Gen	NPAssn	20	11	6	103	432
Hospital for Crippled Children+▲	Orth	NPAssn	95	52	..	...	809
Hospital of St. Barnabas and for Women and Children★+▲◇	Gen	Church	249	166	38	1,527	7,799
▲	Gen	NPAssn	118	79	25	422	3,121
▲	Gen	NPAssn	365	288	76	2,867	12,195
▲	Gen	City	700	711	40	1,623	13,375
Newark Eye and Ear Infirmary+▲	ENT	NPAssn	65	39	..	...	2,830
Presbyterian Hospital+▲◇	Gen	NPAssn	275	218	65	2,093	9,731
St. James Hospital▲◇	Gen	Church	125	85	21	415	3,918
St. Michael's Hospital★+▲◇	Gen	Church	405	352	75	2,605	12,456
New Brunswick, 38,768—Middlesex							
Middlesex General Hospital▲◇	Gen	NPAssn	115	88	25	1,015	4,299
St. Peter's General Hosp.★+▲◇	Gen	Church	188	143	45	1,750	8,099
U. S. Army Hospital	Gen	Army	100	25	2	1	125
New Lisbon, 213—Burlington							
Marcus W. Newcomb Hospital for Chest Diseases	TB	County	110	86	..	...	93
Newton, 5,771—Sussex							
Newton Memorial Hospital▲	Gen	NPAssn	42	38	9	510	1,929
Northfield, 3,496—Atlantic							
Atlantic County Hospital for Mental Diseases	Ment	County	475	326	..	...	103
Atlantic County Hospital for Tuberculous Diseases▲	TB	County	89	87	..	...	83
Orange, 38,413—Essex							
New Jersey Orthopaedic Hospital+▲	Orth	NPAssn	41	38	..	...	732

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Orange Memorial Hosp.★+▲◇..	Gen	NPAssn	390	250	85	1,780	10,932
St. Mary's Hospital▲◇.........	Gen	Church	139	93	39	798	3,997
Passaic, 57,851—Passaic							
Beth Israel Hospital▲..........	Gen	NPAssn	77	54	22	485	2,484
Passaic General Hospital★+▲◇.	*Gen*	*NPAssn*	*242*	*176*	*65*	*1,948*	*7,610*
St. Mary Hospital★▲◇.........	Gen	Church	190	126	50	1,352	6,144
Paterson, 139,428—Passaic							
Hope Dell Hospital▲..........	Chr	County	425	138	..	...	96
Nathan and Miriam Barnert Memorial Hospital★▲◇	Gen	NPAssn	121	89	29	1,011	4,162
[illegible] ★+▲◇..	Gen	NPAssn	372	266	84	2,617	10,550
[illegible] ▲	Gen	Church	366	300	63	1,963	9,373
[illegible] ▲.....	TB	County	240	226	..	...	193
Perth Amboy, 41,291—Middlesex							
Perth Amboy General Hospital★▲◇.................	Gen	NPAssn	225	174	45	1,442	8,585
Phillipsburg, 18,909—Warren							
Warren Hospital.....	Gen	NPAssn	109	74	30	800	3,596
Plainfield, 42,212—Union							
Muhlenberg Hospital★+▲◇.....	Gen	NPAssn	270	222	60	2,456	10,013
Point Pleasant, 3,977—Ocean							
Point Pleasant Hospital▲......	Gen	NPAssn	48	21	10	269	1,473
Princeton, 12,160—Mercer							
Isabella McCosh Infirmary of Princeton University......	Inst	NPAssn	55	16	.	...	1,086
[illegible]▲	Gen	NPAssn	89	62	18	631	2,922
[illegible]							
[illegible]	Inst	State	52	6		...	354
[illegible]▲	Gen	NPAssn	80	65	20	875	3,397
Red Bank, 12,710—Monmouth							
Riverview Hospital...	Gen	NPAssn	40	37	11	394	1,776
Ridgewood, 17,467—Bergen							
Bergen Pines, Bergen County Hospital+▲	TbIso	County	321	205	..	...	615
Riverside, 4,000—Burlington							
Zurbrugg Memorial Hospital▲.	Gen	NPAssn	38	30	18	483	1,702
Salem, 9,077—Salem							
Salem County Memorial Hospital..	Gen	NPAssn	48	37	18	598	1,909
Scotch Plains, 3,500—Union							
Bonnie Burn Sanatorium▲.....	TB	County	328	271	..	...	234
Secaucus, 9,857—Hudson							
Hudson County Contagious Disease Hospital▲	Iso	County	120	20	..	...	289
Hudson County General *Hospital*	*InstGen*	*County*	*210*	*189*	..	...	*124*
Hudson County Hospital for Mental Diseases▲	Ment	County	2,117	1,893	..	...	526
Skillman, 23—Somerset							
New Jersey State Village for Epileptics	Epil	State	1,527	1,428	..	...	111
Somers Point, 2,474—Atlantic							
Shore Memorial Hospital▲. ...	Gen	NPAssn	65	50	14	563	2,175
Somerville, 11,566—Somerset							
Somerset Hospital▲◇.. .	Gen	NPAssn	150	120	40	1,614	6,662
South Amboy, 8,430—Middlesex							
South Amboy Memorial Hospital..	Gen	NPAssn	35	11	10	...	3,934
Summit, 17,890—Union							
Fair Oaks Sanatorium.	N&M	Corp	59	47	..	...	491
Overlook Hospital★▲◇.........	Gen	NPAssn	145	108	41	988	4,644
Teaneck, 25,275—Bergen							
Holy Name Hospital★▲◇......	Gen	Church	185	136	50	1,714	5,834
Trenton, 127,867—Mercer							
F. W. Donnelly Memorial Hospitals.	TbIso	City	400	351	..	...	362
Glenwood Sanitarium.........	N&M	Indiv	30	20	..	...	121
Mercer Hospital★+▲◇.	Gen	NPAssn	246	187	46	2,044	7,960
New Jersey State Hosp.+▲⊙ .	Ment	State	3,697	3,692	..	...	1,527
New Jersey State Prison Hospital▲...	Inst	State	43	30	..	...	1,037
Orthopaedic Hospital and Dispensary+▲.	Orth	NPAssn	45	38	..	...	337
St. Francis Hospital★+▲◇	Gen	Church	300	210	33	1,315	9,712
Trenton General Hospital. ...	Gen	NPAssn	60	36	15	228	1,428
William McKinley Memorial Hospital★▲◇	Gen	NPAssn	136	121	35	1,229	4,533
Verona, 10,910—Essex							
Essex County Sanatorium+▲..	TB	County	444	400	..	...	334
Vineland, 8,128—Cumberland							
Newcomb Hospital+▲.........	Gen	NPAssn	93	59	32	614	2,805
Weehawken (Union City P. O.), 14,363—Hudson							
North Hudson Hospital★▲.....	Gen	NPAssn	166	79	25	399	3,221
Westfield, 21,335—Union							
Children's Country Home▲....	Orth	NPAssn	30	28	.	..	53
Woodbury, 10,909—Gloucester							
Underwood Hospital▲.........	Gen	NPAssn	70	55	30	937	3,277
Wyckoff, 500—Bergen							
Christian Sanatorium..........	N&M	NPAssn	165	147	..	...	168

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Atlantic City, 61,642—Atlantic							
Ocean Rest Sanitarium	Conv	Indiv	12	...	..	Estab. 1950	
Caldwell, 6,222—Essex							
Theresa Grotta Home for Convalescents	Conv	NPAssn	35	24	..	...	268
Far Hills, 574—Somerset							
Kate Macy Ladd Convalescent Home...........	Conv	NPAssn	50	40	..	...	675
Farmingdale, 609—Monmouth							
Tuberculosis Preventorium for Children	TB	NPAssn	250	150	..	...	371
Haddonfield, 10,500—Camden							
Bancroft School.....	MeDe	NPAssn	100	94	..	...	18
Jamesburg, 2,302—Middlesex							
New Jersey State Home for Boys	Inst	State	25	10	..	...	716
[illegible]							
[illegible]	*Mat*	*Church*	*41*	*21*	*6*	*75*	*121*
North Jersey Training School..	MeDe	State	725	725	..	...	111
Longport, 303—Atlantic							
Betty Bacharach Home for Afflicted Children...........	Conv	NPAssn	100	54	..	...	107
Menlo Park, 400—Middlesex							
New Jersey Home for Disabled Soldiers......	Inst	State	86	80	..	...	22
Metuchen, 9,858—Middlesex							
Middlesex Nursing Home......	Conv	Corp	60	55	..	...	60
Newark, 437,857—Essex							
Florence Crittenton Home.....	Mat	NPAssn	30	27	20	83	97
Ivy Haven....................	Inst	City	90	82	..	...	155
Ne[illegible]	Conv	City	150	142	..	...	70
New [illegible]							
Ma[illegible]	Inst	NPAssn	22	1	..	..	208
[illegible]	Orth	NPAssn	24	18	..	...	97
[illegible]	Inst	NPAssn	13	2	..	..	151
N[illegible]							
[illegible] Hospital......................	Ment	County	300	248	..	...	44
New Jersey State Colony......	MeDe	State	900	892	..	...	100
Paterson, 139,423—Passaic							
Paterson City Hospital........	ChrIso	City	110	30	..	...	137
Pinewald (Bayville P. O.)—Ocean							
[illegible]	Conv	Part	175	...	..	Estab. 1950	
Roseland, 2,015—Essex							
Mountain View Rest...........	N&M	Corp	22	20	..	...	9
Sea Isle City, 773—Cape May							
Sea Isle Hospital and Training School.............	MeDe	Corp	56	52	..	...	18
Trenton, 127,867—Mercer							
State Home for Girls..........	Inst	State	70	53	3	39	203
Vineland, 8,128—Cumberland							
Training School at Vineland (Chandler Hospital)....	MeDe	NPAssn	566	540	..	...	58
Vineland State School.........	MeDe	State	1,800	1,758	..	...	60
Westfield, 21,335—Union							
[illegible]	Conv	Indiv	31	30	..	...	19
[illegible] Rehabilitation...............	Conv	NPAssn	33	19	..	...	70
Woodbine, 2,427—Cape May							
Woodbine Colony For Feebleminded Males.........	MeDe	State	950	929	..	...	64

NEW MEXICO

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Alamogordo, 6,767—Otero							
Gerald D. Champion Memorial Hospital........................	Gen	County	24	13	9	206	1,188
[illegible]llo							
[illegible]▲...	Gen	IA	60	46	8	208	1,805
[illegible]▲..	TB	IA	100	100	..	...	237
Atchison, Topeka and Santa Fe Hospital..................	Indus	NPAssn	78	62	..	...	1,248
Nazareth Sanatorium○.........	N&M	Church	40	23	..	...	227
St. Joseph Sanatorium and Hospital▲◇	GenTb	Church	197	188	44	1,455	7,368
Southwestern Presbyterian Sanatorium▲	GenTb	Church	158	125	22	966	3,867
[illegible]▲..	[illegible]	Vet	289	274	..	...	2,632
[illegible]							
[illegible]	[illegible]	Church	40	23	12	303	1,492
[illegible]							
[illegible]	[illegible]	IA	43	20	8	63	815
Carlsbad, 17,915—Eddy							
St. Francis Xavier Hospital....	Gen	Church	45	38	12	551	2,877
Carrizozo, 1,387—Lincoln							
Lincoln County Municipal Hospital.....................	Gen	CyCo	23	...	7	Estab. 1950	
Clayton, 3,263—Union							
St. Joseph Hospital...........	Gen	Church	25	12	8	123	838
Clovis, 17,168—Curry							
[illegible]	Gen	City	60	43	12	536	3,108
[illegible]	*Gen*	*IA*	*65*	*44*	*10*	*204*	*1,298*
[illegible]	Gen	Church	25	12	12	161	549
Espanola Hospital.............	Gen	Church	30	19	15	301	1,414
Eunice, 2,335—Lea							
Barzune Hospital..............	Gen	Indiv	8	2	3	77	344
[illegible]	Gen	NPAssn	18	12	8	259	950
[illegible]▲	TB	Vet	223	189	..	...	724
Fort Stanton, 490—Lincoln							
[illegible]▲	TB	USPHS	242	180	..	...	209
[illegible]	Gen	Church	80	27	16	235	1,683
[illegible] Hospital......................	Gen	County	80	...	26	Estab. 1950	

Key to symbols and abbreviations is on page 124

NEW MEXICO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hot Springs, 4,580—Sierra							
Carrie Tingley Hospital for Crippled Children+▲	Orth	State	100	70	..	...	405
[illegible]	Gen	Church	34	12	6	56	691
L[illegible]							
[illegible]	Gen	NPAssn	33	...	8	...	...
[illegible]	Ment	State	1,040	1,038		...	274
St. Anthony's Hospital	Gen	Church	65	42	15	344	2,713
Los Alamos, 100—Sandoval							
Los Alamos Medical Center▲	Gen	NPAssn	71	32	13	284	1,872
Mescalero, 200—Otero							
Mescalero Apache Indian Hospital	Gen	IA	22	12	4	48	540
[illegible]▲	Gen	State	35	22	11	348	1,677
[illegible]	Gen	Church	30	16	10	184	678
Roswell, 25,572—Chaves							
St. Mary's Hospital▲	Gen	Church	90	70	20	992	4,077
U. S. Air Force Hospital▲	Gen	USAF	75	28		...	1,165
Santa Fe, 27,547—Santa Fe							
St. Vincent Hospital▲◇	Gen	Church	75	55	15	651	3,469
[illegible]▲	Gen	IA	56	37	6	112	1,050
[illegible]	Gen	NPAssn	45	17	10	181	1,484
Shiprock, 125—San Juan							
[illegible]	Gen	IA	30	20	5	102	975
[illegible]							
Hillcrest General Hospital	Gen	County	56	19	12	337	1,358
Socorro, 4,476—Socorro							
State Tuberculosis Sanat	TB	State	158	147	..	...	173
Taos, 1,804—Taos							
Holy Cross Hospital	Gen	Church	30	14	10	124	979
Tucumcari, 8,369—Quay							
Tucumcari General Hospital	Gen	City	35	23	7	357	1,357
Valmora, 125—Mora							
Valmora Sanatorium	TB	NPAssn	75	22	1	1	114

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albuquerque, 97,012—Bernalillo							
Sandia Ranch Sanatorium	N&M	Indiv	20	5	..	...	51
Los Lunas, 686—Valencia							
Los Lunas Mental Hospital	MeDe	State	120	113	..	...	17

NEW YORK

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albany, 134,382—Albany							
Albany Hospital★+▲◇	GenTb	NPAssn	541	552	30	1,561	16,676
Anthony N. Brady Maternity Home+▲⊙	Mat	Church	68	48	79	2,401	2,832
Child's Hospital	Chil	Church	50	39	..	.	1,388
Memorial Hospital★+▲◇	Gen	NPAssn	137	120	20	536	3,782
St. Peter's Hospital★▲◇	Gen	Church	275	197	..	1	7,071
Albion, 4,839—Orleans							
Arnold Gregory Memorial Hospital	Gen	NPAssn	27	17	11	238	1,108
A[illegible]							
[illegible]	Gen	NPAssn	29	...	10	..	...
A[illegible]							
[illegible]	Gen	Corp	100	63	28	967	3,947
[illegible]-Knickerbocker Hall	N&M	Corp	175	154	..	...	308
South Oaks, Long Island Home	N&M	Corp	229	206	..	...	607
Amsterdam, 32,269—Montgomery							
St. Mary's Hospital▲◇	Gen	Church	175	106	26	841	3,997
Auburn, 36,667—Cayuga							
Auburn City Hospital★▲◇	Gen	NPAssn	208	162	47	1,088	7,050
Home for Convalescent and Crippled Children	Unit of Auburn City Hospital						
Mercy Hospital▲	Gen	Church	96	64	14	487	2,831
Ball[illegible]							
B[illegible]	Gen	NPAssn	22	16	6	165	1,004
Bat[illegible]—Genesee							
Genesee Memorial Hospital▲	Gen	NPAssn	73	55	22	695	2,881
St. Jerome Hospital▲	Gen	Church	80	63	15	521	3,030
Veterans Admin. Hospital+▲	TB	Vet	220	157	..	...	1,089
Bath, 5,409—Steuben							
Bath Memorial Hospital▲	Gen	NPAssn	60	39	10	478	1,927
Veterans Admin. Center+▲	Gen	Vet	458	380	..	...	3,760
Bay Shore, 9,648—Suffolk							
Dr. King's Hospital	Gen	Indiv	35	12	8	119	624
Southside Hospital▲	Gen	NPAssn	125	88	24	1,612	5,377
Beacon, 14,110—Dutchess							
Craig House	N&M	Corp	80	48	..	...	78
Highland Hospital	Gen	NPAssn	46	30	11	221	1,356
[illegible]▲	Ment	State	1,734	1,690	..	...	170
B[illegible]							
[illegible]▲	TB	NPAssn	230	228	..	...	218
Binghamton, 81,132—Broome							
Binghamton City Hosp.★+▲◇	Gen	City	449	327	37	1,316	11,766
Binghamton State Hosp.+▲◇	Ment	State	2,716	2,702	..	...	800
Our Lady of Lourdes Memorial Hospital▲	Gen	Church	68	70	22	1,165	3,405
[illegible]							
[illegible]	See West Brentwood						
[illegible]	Conv	Indiv	110	101	..	...	118
[illegible]—Monroe							
Lakeside [illegible]	Gen	NPAssn	15	12	6	304	670
[illegible]▲	Gen	NPAssn	100	90	36	891	3,731

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Brooklyn, 2,716,347—Kings							
Adelphi Hospital	Gen	NPAssn	160	120	50	818	5,492
Bay Ridge Hospital▲	Gen	Corp	80	63	38	1,409	3,339
Bethany Deaconess Hospital	Gen	Church	85	53	22	525	2,093
Beth-El Hospital★+▲	Gen	NPAssn	242	191	100	3,698	8,474
Beth Moses Hospital★+▲	See Maimonides Hospital						
Brooklyn Cancer Institute+▲	Cancer	City	77	82	..	...	672
Brooklyn Doctors Hospital	Gen	Corp	82	56	42	1,432	3,785
Brooklyn Eye and Ear Hospital+▲	ENT	NPAssn	137	82	..	...	9,197
Brooklyn Hebrew Home and Hospital for the Aged	Chr	NPAssn	704	651	..	...	221
Brooklyn Hospital★+▲◇	Gen	NPAssn	362	257	60	1,699	9,329
Brooklyn State Hospital+▲◇	Ment	State	3,428	3,426	..	...	1,503
[illegible]▲	TB	NPAssn	125	106	..	...	299
[illegible]+	ObGyn	NPAssn	43	34	45	1,535	1,674
[illegible]▲	Gen	NPAssn	101	71	26	1,023	3,844
[illegible]▲	Gen	NPAssn	100	83	30	976	3,756
[illegible]▲	Gen	NPAssn	102	56	36	1,333	3,256
Coney Island Hospital★+▲	Gen	City	270	306	30	850	4,878
[illegible]▲	Gen	City	284	278	34	1,554	9,586
[illegible]	Gen	Church	95	61	36	1,088	3,040
[illegible]▲	Gen	City	281	287	32	1,459	6,352
Hospital of the Holy Family▲	Gen	Church	130	119	..	...	2,574
House of St. Giles the Cripple+▲	Orth	Church	44	40	..	...	155
Israel Zion Hospital★+▲◇	See Maimonides Hospital						
Jewish Hospital★+▲◇	Gen	NPAssn	500	417	135	5,019	15,757
Jewish Sanitarium and Hospital for Chronic Diseases+▲	Chr	NPAssn	794	538	..	...	249
Kings County Hospital★+▲◇	Gen	City	2,509	2,867	90	3,610	64,401
Kingston Avenue Hospital+▲⊙	IsoTb	City	415	347	..	...	3,855
Long Island College Hospital★+▲◇	Gen	NPAssn	394	296	47	1,771	9,298
[illegible]▲	Gen	Church	120	73	28	790	3,760
[illegible]	Gen	Corp	167	97	37	1,805	4,548
Maimonides Hospital★+▲◇	Gen	NPAssn	679	353	88	2,805	9,855
Methodist Hospital★+▲◇	Gen	Church	460	282	80	2,239	10,147
Midwood Hospital▲	Gen	Corp	60	47	22	799	2,567
Norwegian Lutheran *Deaconesses' Home* and Hospital★+▲◇	Gen	Church	210	157	53	1,678	7,080
Prospect Heights Hosp.★+▲◇	Gen	NPAssn	159	111	39	1,080	5,912
St. Catherine's Hospital★+▲◇	Gen	Church	287	209	57	1,650	7,251
St. Charles Hospital Orthopedic Clinic+▲	Orth	Church	60	50	..	...	216
St. John's Episcopal Hospital★+▲◇	Gen	Church	229	141	32	919	5,375
St. Mary's Hospital★+▲◇	Gen	Church	237	184	63	1,732	6,488
St. Peter's Hospital▲	Gen	Church	172	112	32	594	3,140
[illegible]	Gen	Church	85	47	33	884	2,334
[illegible]	Gen	Corp	80	44	17	1,123	3,385
[illegible]	Gen	NPAssn	88	61	20	595	2,637
[illegible]	Gen	Army	111	41	3	2	1,720
[illegible]	TB	USPHS	350	273	..	...	382
[illegible]	Gen	NPAssn	226	135	57	1,990	6,602
Veterans Admin. Hospital+▲	Gen	Vet	1,000	366	..	...	2,762
Victory Memorial Hospital	Gen	NPAssn	52	40	26	664	1,988
Wade Hospital	Gen	Indiv	20	7	..	...	235
[illegible]▲	Gen	NPAssn	167	141	23	1,202	6,052
B[illegible]							
[illegible]▲	Gen	Church	171	140	..	...	4,457
[illegible]	Unit of Sisters of Charity Hospital						
[illegible]▲◇	Gen	Church	442	312	90	3,417	13,161
Buffalo Columbus Hospital	Gen	NPAssn	109	92	10	464	3,677
[illegible]	ENT	NPAssn	12	9	..	...	685
[illegible]★+▲◇	Gen	NPAssn	448	430	50	1,303	12,081
[illegible]+▲	Ment	State	2,847	2,727	..	...	805
Children's Hospital+▲	MatCh	NPAssn	270	208	71	2,633	9,397
Deaconess Hospital★+▲◇	Gen	NPAssn	277	225	52	1,799	9,746
Edward J. Meyer Memorial Hospital★+▲◇	GenTb	County	858	782	30	901	10,353
Emergency Hospital+▲	See Allied Hospitals of the Sisters of Charity						
Lafayette General Hospital	Gen	NPAssn	63	34	10	211	1,957
Louise de Marillac Hospital	See Allied Hospitals of the Sisters of Charity						
Mercy Hospital★▲◇	Gen	Church	325	274	75	2,096	9,449
Millard Fillmore Hosp.★+▲◇	Gen	NPAssn	473	440	107	4,584	18,224
Roswell Park Memorial Institute+▲	Cancer	State	110	94	..	...	1,137
St. Francis Hospital▲	Gen	Church	53	43	..	...	1,760
Sisters of Charity Hosp.★+▲◇	See Allied Hospitals of the Sisters of Charity						
[illegible]▲	Gen	Vet	1,005	...	..	Estab. 1950	
C[illegible]							
[illegible]	Gen	Part	19	13	4	161	586
Cambridge, 1,674—Washington							
Mary McClellan Hospital+▲⊙	Gen	NPAssn	100	54	15	225	1,661
Canandaigua, 8,296—Ontario							
Brigham Hall Hospital	N&M	Corp	79	62	..	...	129
Frederick Ferris Thompson Hospital▲	Gen	NPAssn	102	70	18	598	3,265
Veterans Admin. Hospital+▲	Ment	Vet	1,700	1,628	..	...	486
Cassadaga, 514—Chautauqua							
Newton Memorial Hospital▲	TB	County	102	79	..	...	75
Castle Point, 23—Dutchess							
Veterans Admin. Hospital+▲	TB	Vet	605	563	..	...	625
Catskill, 5,336—Greene							
Memorial Hospital of Greene County▲	Gen	StateCo	79	53	15	486	2,561

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Central Islip, 3,039—Suffolk							
Central Islip State Hosp.+▲◇..	Ment	State	8,347	8,163	..	...	1,576
Central Valley, 1,049—Orange							
Falkirk in the Ramapos..	N&M	Indiv	40	23	..	...	20
Chatham, 2,369—Columbia							
Chatham Community Hospital and Sanitarium..	Gen	Indiv	42	25	2	30	365
Chenango Bridge, 400—Broome							
Broome County Tuberculosis Hospital▲...	TB	County	95	91	..	...	73
Clifton Springs, 1,837—Ontario							
Clifton Springs Sanitarium and *Clinic*+▲	Gen	*NPAssn*	*275*	*136*	*12*	*323*	*3,785*
Cohoes, 21,235—Albany							
Cohoes Hospital	Gen	NPAssn	61	38	12	314	1,505
Cold Spring, 1,786—Putnam							
Julia L. Butterfield Memorial Hospital...........	Gen	NPAssn	45	20	6	145	815
Cooperstown, 2,716—Otsego							
Mary Imogene Bassett Hospital★+▲....	Gen	NPAssn	92	69	22	419	2,726
Copiague, 2,000—Suffolk							
Nassau Suffolk General Hosp..	Gen	Corp	42	29	6	...	1,785
Corning, 17,723—Steuben							
Corning Hospital▲............	Gen	NPAssn	103	78	26	936	4,136
Cornwall, 2,206—Orange							
Cornwall Hospital▲...........	Gen	NPAssn	65	36	15	341	1,694
Cortland, 18,120—Cortland							
Cortland County Hospital▲...	Gen	NPAssn	130	105	26	803	4,058
VerNooy Sanitarium. .. .	Gen	Indiv	16	12	7	273	677
Croton-on-Hudson, 4,863—Westchester							
Croton Manor Sanitarium.....	N&M	Indiv	94	61	.	...	211
Cuba, 1,766—Allegany							
Cuba Memorial Hospital.......	Gen	NPAssn	28	21	10	255	1,277
Dannemora, 4,129—Clinton							
Clinton Prison General Hospital	Inst	State	173	114	..	...	491
	Ment	State	1,253	1,103	..	...	125
	Gen	NPAssn	43	32	12	375	1,501
	Gen	NPAssn	16	8	4	103	402
Dobbs Ferry, 6,246—Westchester							
Dobbs Ferry Hospital▲ .. .	Gen	NPAssn	46	30	10	139	1,072
Dunkirk, 17,965—Chautauqua							
▲ .	Gen	NPAssn	116	90	24	710	3,350
	Gen	NPAssn	14	7	5	144	280
Veterans Memorial Hospital .	Gen	NPAssn	48	25	12	207	916
Elmhurst,—Queens							
Horace Harding Hospital... .	Gen	Corp	156	129	44	2,032	7,757
Elmira, 49,690—Chemung							
Arnot-Ogden Memorial Hospital★▲◇.	Gen	NPAssn	197	168	42	1,221	6,778
Chemung County Sanatorium	TB	County	41	34		.	38
St. Joseph's Hospital★▲◇. ...	Gen	Church	235	168	38	874	6,597
Endicott, 20,168—Broome							
Ideal Hospital▲..	Gen	City	96	69	30	740	3,172
Farmingdale, 4,477—Nassau							
Nassau County Tuberculosis Hospital+▲	TB	County	357	280	..	..	258
Far Rockaway,—Queens							
Hospital for Joint Diseases Country Branch	Unit of Hospital for Joint Diseases N. Y. C.						
▲	Gen	Church	129	93	36	873	4,379
	Gen	City	16	7	6	126	290
Flushing,—Queens							
Flushing Hospital and Dispensary★+▲◇............	Gen	NPAssn	282	225	94	3,034	10,520
Parsons Hospital..	Gen	Corp	85	70	20	703	3,519
Freeport, 24,589—Nassau							
Freeport Hospital	Gen	Corp	32	20	20	476	1,854
Gabriels, 300—Franklin							
Sanatorium Gabriels▲.........	TB	Church	146	86	..	...	66
Geneva, 17,087—Ontario							
Geneva General Hospital▲.....	Gen	NPAssn	102	50	20	420	2,383
Glen Cove, 15,084—Nassau							
North Country Community Hospital★▲.	Gen	NPAssn	105	87	22	1,105	4,024
▲	Ment	NPAssn	172	162	..	...	351
▲	Gen	NPAssn	250	187	50	1,622	8,361
	TB	County	46	42	..	..	44
▲	*Gen*	*NPAssn*	*133*	*95*	*30*	*861*	*4,101*
Goshen, 3,251—Orange							
Goshen Hospital	Gen	NPAssn	40	29	12	276	1,068
Interpines Sanitarium .	N&M	Indiv	60	31	.	...	52
Gouverneur, 4,907—St. Lawrence							
Edward John Noble Hosp.▲...	Gen	NPAssn	62	...	15	Estab. 1950	
Governors Island,—New York							
U. S. Army Hospital▲....... .	Gen	Army	200	156	..	...	4,780
Gowanda, 3,172—Cattaraugus							
Tri-County Memorial Hospital	Gen	NPAssn	51	17	16	352	1,592
Greenport, 2,989—Suffolk							
Eastern Long Island Hospital..	Gen	NPAssn	64	38	20	412	1,726
Harrison, 8,500—Westchester							
St. Vincent's Retreat....	N&M	Church	200	165	..	...	140
Helmuth, 100—Erie							
Gowanda State Homeopathic Hospital+▲◇	Ment	State	2,480	3,000	..	...	874
Hempstead, 29,021—Nassau							
Meadowbrook Hospital★+▲....	Gen	County	250	271	24	772	7,474

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Herkimer, 9,397—Herkimer							
Herkimer Memorial Hospital..	Gen	City	52	37	17	419	1,93
Hollis,—Queens							
Terrace Heights Hospital......	Gen	Part	37	32	..	...	2,31
	TB	County	105	101	..	...	11
▲	Gen	NPAssn	58	36	12	319	1,7
St. James Mercy Hospital▲◇...	Gen	Church	99	67	18	502	3,3
Hudson, 11,656—Columbia							
Columbia Memorial Hospital▲.	Gen	NPAssn	108	88	18	590	3,3
Huntington, 9,267—Suffolk							
Huntington Hospital▲.........	Gen	*NPAssn*	*90*	*75*	*22*	939	4,3
Ilion, 9,322—Herkimer							
Ilion Hospital	Gen	NPAssn	56	32	17	419	1,07
		NPAssn	120	107	..	...	2
Cornell University Infirmary+▲	Inst	NPAssn	154	20	..	...	1,6
Hermann M. Biggs Memorial Hospital+▲⊙................	TB	State	250	206	..	...	37
Tompkins County Memorial Hospital▲...	Gen	County	144	114	28	1,221	5,0
Jackson Heights,—Queens							
Physicians Hospital..........	*Gen*	*Corp*	*135*	*120*	*44*	*1,851*	*8,51*
Jamaica,—Queens							
Jamaica Hospital★+▲.	Gen	NPAssn	185	171	44	1,752	6,2
Mary Immaculate Hosp.★+▲◇.	Gen	Church	295	215	63	2,079	8,63
Memorial Hospital.......... .	Gen	Indiv	115	85	49	823	3,47
Queens General Hospital★+▲⊙.	Gen	City	705	884	52	1,739	14,2
Triboro Hospital+▲⊙..........	TB	City	625	637	..	...	5
Jamestown, 43,250—Chautauqua							
Jamestown General Hospital▲.	Gen	City	142	92	22	592	4,5
Woman's Christian ▲ ...	Gen	NPAssn	110	110	32	1,169	5,7
Jo							
Hospital★+▲◇...............	Gen	NPAssn	450	284	50	1,548	9,7
Katonah, 1,800—Westchester							
Four Winds........	N&M	Corp	37	23	..	...	3
Pinewood Sanitarium+........	N&M	Part	83	58	..	...	27
Kew Gardens,—Queens							
Kew Gardens General Hospital	Gen	Corp	164	134	58	1,467	6,8
Kings Park, 10,944—Suffolk							
Kings Park State Hosp.+▲◇....	Ment	State	8,312	8,430	..	...	2,9
Kingston, 28,860—Ulster							
Benedictine Hospital (Our Lady of Victory Sanitarium)+▲◇.............	Gen	Church	92	74	18	483	3,00
Kingston Hospital▲◇..........	Gen	NPAssn	118	97	15	664	4,25
Ulster County Tuberculosis Hospital▲	TB	County	56	52	..	...	5
▲	Indus	NPAssn	28	7	..	...	23
▲	Gen	Church	229	144	51	1,467	6,10
Stony Wold-in-the-Adirondacks▲..............	TB	NPAssn	141	117	..	...	8
Lake Placid, 2,981—Essex							
Lake Placid General Hospital..	Gen	City	20	11	6	72	50
Liberty, 4,652—Sullivan							
	Gen	NPAssn	38	27	6	229	1,09
	TB	NPAssn	75	36	..	...	78
I							
▲	Gen	NPAssn	80	55	19	597	2,727
I							
▲	Gen	City	142	125	30	915	5,291
▲	TB	County	200	171	..	...	15
I							
▲	Gen	NPAssn	50	35	7	162	1,60
L							
	Gen	Corp	43	43	9	849	2,55
	Gen	Corp	125	82	44	1,873	6,21
	N&M	Corp	120	99	..	...	72
St. John's Long Island City Hospital★+▲◇..............	Gen	Church	230	180	39	1,017	5,810
Lowville, 3,653—Lewis							
Lewis County General Hosp...	Gen	StateCo	46	40	18	391	1,471
Lyons, 4,213—Wayne							
Edward J. Barber Hospital....	Gen	Indiv	25	18	4	193	912
Lyons Hospital...	Gen	Corp	23	14	6	153	755
Mahopac, 1,500—Putnam							
Mahopac Hospital	Gen	NPAssn	14	3	6	147	30
Malone, 9,490—Franklin							
Alice Hyde Memorial Hosp.▲..	Gen	NPAssn	83	62	15	576	3,15
Manhasset, 3,500—Nassau							
Manhasset Medical Center Hospital....................	Gen	Corp	62	30	..	...	1,65
Marcy, 800—Oneida							
Marcy State Hospital+▲.......	Ment	State	2,906	2,774	..	...	69
Margaretville, 812—Delaware							
Margaretville Hospital.........	Gen	NPAssn	52	38	6	200	1,02
Massena, 13,123—St. Lawrence							
Massena Memorial Hospital....	Gen	City	49	31	20	532	2,31
Medina, 6,187—Orleans							
Medina Memorial Hospital▲...	Gen	NPAssn	36	28	10	331	1,59
Middle Grove, 100—Saratoga							
Saratoga County Tuberculosis Hospital▲.................	TB	County	60	51	..	...	53
Middletown, 22,565—Orange							
Elizabeth A. Horton Memorial Hospital▲.........	Gen	NPAssn	114	81	14	396	3,210
Middletown State Homeopathic Hospital+▲◇...	Ment	State	3,444	3,261	..	...	51

Key to symbols and abbreviations is on page 124

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Mineola, 15,574—Nassau							
Nassau Hospital★+▲	Gen	NPAssn	227	188	50	1,979	9,107
Mineville, 600—Essex							
Mineville Hospital	Indus	NPAssn	18	13	1	...	388
	Gen	USAF	149	93	15	346	2,885
	Gen	Indiv	30	21	6	154	904
	Gen	NPAssn	55	28	9	145	1,286
	Gen	NPAssn	35	25	6	244	1,186
	Ment	Vet	1,965	...	..	Estab. 1950	
	Gen	NPAssn	137	90	20	633	3,910
	TB	State	250	211	.	...	209
Mount Ve							
Mount		NPAssn	219	182	40	1,437	8,047
Newark, 10,275—Wayne							
Newark Hospital	Gen	Indiv	27	20	6	223	1,028
Newburgh, 31,924—Orange							
Estelle and Walter C. Odell Memorial Sanatorium	TB	County	50	50	..	...	69
St. Luke's Hospital★▲	Gen	NPAssn	186	129	32	996	5,852
New Rochelle, 59,626—Westchester							
New Rochelle Hospital★+▲◇	Gen	NPAssn	300	227	60	1,338	9,094
New York City, 4,927,737—New York							
Alfred E. Smith Memorial Hospital	Unit of St. Vincent's Hospital						
	Unit of Presbyterian Hospital						
	Gen	NPAssn	96	69	..	...	1,654
	Gen	City	3,082	2,967	58	2,930	54,131
	Gen	NPAssn	167	131	27	992	4,866
	Gen	NPAssn	382	292	80	2,850	10,028
Infirmary+▲	ENT	NPAssn	54	27	..	...	3,950
	Gen	NPAssn	329	259	80	2,602	9,578
	Drug	Corp	43	30	..	...	1,526
	Gen	Church	260	189	40	445	5,633
Doctors Hospital+▲	Gen	NPAssn	272	227	70	1,950	7,452
Endaural Hospital	ENT	Indiv	33	20	..	...	501
Flower and Fifth Avenue Hospitals★+▲◇	Gen	NPAssn	360	325	84	1,997	10,439
Fordham Hospital★+▲◇	Gen	City	414	519	32	1,045	10,865
Francis Delafield Hospital	Cancer	City	307	...	..	Estab. 1951	
French Hospital★+▲	Gen	NPAssn	251	190	62	1,419	6,583
Goldwater Memorial Hosp.★+▲	Chr	City	1,804	1,726	..	...	1,739
Gouverneur Hospital★+▲	Gen	City	177	210	..	...	3,272
Harkness Pavilion	Unit of Presbyterian Hospital						
Harlem Eye and Ear Hosp.+▲	ENT	NPAssn	38	11	..	...	2,335
Harlem Hospital★+▲◇	Gen	City	705	959	84	4,429	19,835
Home and Hospital of the Daughters of Jacob	InstGen	NPAssn	243	236	..	...	99
Home for Aged and Infirm Hebrews▲	Inst	NPAssn	111	64	..	...	123
Hospital for Joint Diseases★+▲	GenOrth	NPAssn	362	309	..	...	5,905
Hospital for Special Surgery+▲	Orth	NPAssn	235	186	..	...	3,153
Hospital of the Rockefeller Institute for Medical Research▲	Gen	NPAssn	35	19	..	...	186
Institute of Ophthalmology	Unit of Presbyterian Hospital						
James Ewing Hospital	Cancer	City	275	...	..	Estab. 1950	
Jewish Memorial Hospital★+▲	Gen	NPAssn	190	146	44	1,754	5,868
	Gen	NPAssn	192	154	..	44	4,742
	Gen	NPAssn	214	188	35	1,596	5,787
	Mat	Indiv	39	29	39	1,299	1,459
	Gen	NPAssn	530	399	68	1,387	12,839
	Gen	Corp	51	38	20	622	1,694
	Gen	Part	80	45	14	161	2,649
	Gen	City	391	467	66	2,390	13,054
	Gen	NPAssn	120	79	30	587	3,438
Lying-In Hospital+▲	Unit of New York Hospital						
Madison Avenue Hospital	Gen	Part	101	...	24	Reorganized	
	ENT	NPAssn	210	125	..	...	11,060
	Gen	Corp	500	373	40	1,873	8,436
Dispensary	Unit of New York Hospital						
	Ment	State	3,951	3,942	..	...	1,671
	Gen	Corp	135	98	6	...	3,797
	Cancer	NPAssn	268	248	..	...	7,007
	Gen	City	1,060	1,213	40	1,863	13,812
	Gen	NPAssn	61	42	..	...	2,474
	Gen	Church	181	126	50	1,276	5,051
	GenTb	NPAssn	626	508	..	...	4,259
	Gen	City	466	556	45	1,578	11,752
	Gen	Church	175	95	30	645	3,664
Mount Eden Hospital	Gen	Indiv	39	30	17	510	2,250
Mount Morris Park Hosp.▲	Gen	NPAssn	55	38	..	...	1,568
Mount Sinai Hospital★+▲◇	Gen	NPAssn	785	627	..	...	15,052
Neurological Institute+▲⊙	Unit of Presbyterian Hospital						
New York City Cancer Institute Hospital+▲	Cancer	City	225	221	..	...	721
New York City Hospital★+▲	Gen	City	837	844	32	1,149	13,203
New York Eye and Ear Infirmary+▲	ENT	NPAssn	181	99	..	...	5,725
New York Foundling Hosp.+	Chil	Church	248	76	20	...	628
New York Hospital★+▲◇	Gen	NPAssn	1,081	887	112	3,790	22,002
New York Infirmary★+▲	Gen	NPAssn	121	81	40	1,237	3,579

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
New York Nursery and Childs Hospital	Unit of New York Hospital						
New York Orthopaedic Dispensary and Hospital+▲	Unit of Presbyterian Hospital						
New York Polyclinic Medical School and Hospital★+▲	Gen	NPAssn	374	244	37	1,368	9,572
New York Skin and Cancer Hospital	Unit of University Hospital						
New York State Psychiatric Institute+▲⊙	Ment	State	168	136	..	...	300
Park East Hospital	Gen	Corp	119	115	30	1,186	5,618
Parkway Hospital	Gen	NPAssn	74	34	10	363	1,939
Park West Hospital	Gen	Corp	81	64	..	301	3,206
Payne Whitney Psychiatric Clinic▲	Unit of New York Hospital						
Presbyterian Hospital★+▲◇	Gen	NPAssn	1,427	1,163	144	3,514	31,429
Psychiatric Pavilion	Unit of Bellevue Hospital						
Reconstruction Hospital	Unit of University Hospital						
Riker's Island Hospital▲	Inst	City	260	210	..	...	2,718
Roosevelt Hospital★+▲◇	Gen	NPAssn	398	317	..	...	8,434
St. Ann's Maternity Hospital	Unit of New York Foundling Hospital						
St. Barnabas Hospital for Chronic Diseases+▲	Chr	NPAssn	474	459	..	...	797
St. Clare's Hospital★+▲	Gen	Church	440	300	65	1,300	10,813
St. Elizabeth's Hospital▲	Gen	Church	175	136	33	965	5,169
St. Francis' Hospital★+▲	Gen	Church	350	240	52	2,017	7,532
St. Joseph's Hospital for Chest Diseases+▲	TB	Church	300	291	..	...	372
St. Luke's Hospital★+▲◇	Gen	NPAssn	545	423	..	...	9,630
St. Vincent's Hospital★+▲◇	Gen	Church	578	452	61	1,824	12,842
Seton Hospital+▲	TB	City	450	413	..	...	491
Sloane Hospital for Women+▲⊙	Unit of Presbyterian Hospital						
Squire Urological Clinic	Unit of Presbyterian Hospital						
Sydenham Hospital★+▲	Gen	City	208	157	42	1,353	5,248
Union Hospital	Gen	NPAssn	104	72	15	429	2,629
U. S. Marine Hospital▲	Gen	USPHS	435	280	..	...	3,246
University Heights Sanitarium	Gen	Corp	67	49	..	...	2,543
University Hospital★+▲⊙	Gen	NPAssn	395	296	..	...	8,948
Veterans Admin. Hospital+▲	Gen	Vet	1,571	1,494	..	...	10,735
	Gen	Corp	175	174	60	3,094	10,362
	N&M	Indiv	118	105	..	...	1,025
	Gen	Corp	108	73	..	...	3,664
	IsoTb	City	433	229	2	7	5,575
	GynOb	NPAssn	220	144	100	2,747	5,889
Niagara Falls, 90,875—Niagara							
Mount St. Mary's Hosp.★▲	Gen	Church	200	140	40	1,167	5,813
Niagara Falls Memorial Hospital▲	Gen	NPAssn	246	191	36	1,598	7,890
Northport, 3,820—Suffolk							
Veterans Admin. Hospital+▲	Ment	Vet	2,502	2,531	..	...	425
North Tonawanda, 24,730—Niagara							
De Graff Memorial Hospital	Gen	City	89	50	37	821	2,763
	Gen	NPAssn	73	54	18	486	2,141
	Gen	Corp	102	73	24	763	3,441
	Gen	NPAssn	168	109	20	641	4,559
	Ment	State	2,279	2,028	..	...	471
	Gen	Part	33	23	5	138	893
	Gen	NPAssn	94	76	24	599	3,025
	Gen	Church	120	78	24	622	3,118
	Gen	Indiv	16	9	4	34	312
	Gen	City	80	65	19	...	3,283
Oneonta, 13,531—Otsego							
Aurelia Osborn Fox Memorial Hospital▲	Gen	NPAssn	80	62	15	524	2,804
Homer Folks Tuberculosis Hospital+▲⊙	TB	State	250	227	..	...	210
Orangeburg, 750—Rockland							
Rockland State Hospital+▲◇	Ment	State	7,131	6,810	..	...	1,988
Ossining, 16,055—Westchester							
Ossining Hospital▲	Gen	NPAssn	65	59	12	369	2,614
Stony Lodge Sanitarium+	N&M	Indiv	32	22	..	...	100
Oswego, 22,611—Oswego							
Oswego Hospital▲	Gen	NPAssn	76	55	13	754	3,062
Otisville, 889—Orange							
Municipal Sanatorium+▲	TB	City	420	403	..	...	416
Peekskill, 17,746—Westchester							
Peekskill Hospital▲	Gen	NPAssn	75	52	16	584	2,598
Pen Yan, 5,479—Yates							
	Gen	NPAssn	50	26	10	331	1,405
	TB	State	442	324	..	...	285
Philmont, 1,794—Columbia							
Columbia County Tuberculosis Sanatorium	TB	County	72	31	..	...	35
Plattsburg, 17,726—Clinton							
Champlain Valley Hospital▲◇	Gen	NPAssn	106	99	15	521	3,458
Physicians Hospital▲	Gen	NPAssn	156	118	26	761	5,335
Pomona, 50—Rockland							
Summit Park Sanatorium▲	TB	County	86	85	..	...	76
Port Chester, 23,969—Westchester							
Brooklea Farm	N&M	Indiv	18	16	..	...	12
Mary Harkness Convalescent Home	Unit of Presbyterian Hospital, New York City						
St. Luke's Convalescent Hospital	See Greenwich, Conn.						
United Hospital★+▲	Gen	NPAssn	158	151	32	1,117	6,251

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Port Jefferson, 3,293—Suffolk							
John T. Mather Memorial Hospital▲	Gen	NPAssn	76	56	24	680	3,102
St. Charles Hospital for Crippled Children+▲	Orth	Church	175	158	..	...	552
Wharton Memorial Institute	Unit of St. Charles Hospital for Crippled Children						
Port Jervis, 9,348—Orange							
St. Francis Hospital▲	Gen	Church	58	40	12	317	2,239
Potsdam, 7,489—St. Lawrence							
Potsdam Hospital▲	Gen	NPAssn	71	60	20	764	3,263
[illegible] tchess							
[illegible] sp.+▲◇	Ment	State	4,899	4,930	..	...	943
[illegible] ▲	Gen	Church	107	88	25	596	3,441
Samuel and Nettie Bowne Hospital	TB	NPAssn	50	44	..	...	71
Samuel W. Bowne Memorial Hospital▲	TB	City	131	101	..	...	73
Vassar Brothers Hospital★▲◇	Gen	NPAssn	207	167	43	1,031	7,492
Queens Village,—Queens							
Creedmoor State Hospital+▲◇	Ment	State	5,167	5,122	..	...	964
Ray Brook, 550—Essex							
Ray Brook State Tuberculosis Hospital+▲	TB	State	351	314	..	...	280
Rhinebeck, 1,925—Dutchess							
Northern Dutchess Health Service Center▲	Gen	NPAssn	35	41	10	248	1,185
Richland, 300—Oswego							
Oswego County Tuberculosis Hospital▲	TB	County	44	26	..	...	56
Rochester, 331,252—Monroe							
Genesee Hospital★+▲◇	Gen	NPAssn	226	185	36	1,344	7,735
Highland Hospital★+▲◇	Gen	NPAssn	200	153	60	1,857	7,034
Iola-Monroe County Tuberculosis Sanatorium+▲	TB	County	350	338	..	...	325
Monroe County Infirmary▲	Gen	County	550	527	..	...	2,721
Park Avenue Hospital▲	Gen	NPAssn	95	78	16	592	3,517
Rochester General Hosp.★+▲◇	Gen	NPAssn	340	269	63	2,265	12,467
Rochester Municipal Hosp.★+▲	See Strong Memorial-Rochester Municipal Hospitals						
Rochester State Hospital+▲◇	Ment	State	3,588	3,338	..	...	910
St. Mary's Hospital★+▲◇	Gen	Church	325	289	53	2,602	12,656
Strong Memorial-Rochester Municipal Hospitals★+▲◇	Gen	NPAssnCy	747	459	84	1,936	16,352
Rockaway Beach,—Queens							
Rockaway Beach Hospital▲	Gen	NPAssn	100	78	16	503	3,589
Rockville Centre, 22,274—Nassau							
Mercy Hospital▲	Gen	Church	130	131	60	3,698	7,435
South Nassau Communities Hospital▲	Gen	NPAssn	120	101	40	1,947	5,642
Rome, 41,379—Oneida							
Oneida County Hospital	Gen	County	180	171	5	190	2,132
Rome Hospital and Murphy Memorial Hospital▲	Gen	City	115	71	35	1,017	3,332
Rome State School	MeDe	State	3,719	4,353	6	2	263
Rose Hospital	Gen	Indiv	27	19	..	...	988
Roslyn, 1,600—Nassau							
St. Francis Sanatorium for Cardiac Children+	Card	Church	209	184	..	...	117
Roslyn Heights, 3,500—Nassau							
[illegible]	Gen	Corp	48	26	16	547	1,927
[illegible]							
U. S. Naval Hospital★+▲	Gen	Navy	1,710	1,172	21	1,218	9,528
Salamanca, 8,850—Cattaraugus							
City Hospital	Gen	City	52	35	12	429	2,619
Salisbury Center, 331—Herkimer							
Pine Crest Sanatorium▲	TB	County	62	55	..	...	45
Saranac Lake, 6,900—Franklin							
General Hospital▲	Gen	NPAssn	50	33	10	219	1,509
[illegible]	TB	NPAssn	26	24	..	...	10
[illegible] ▲	TB	NPAssn	80	39	..	...	20
Saratoga Springs, 15,434—Saratoga							
Saratoga Hospital▲	Gen	NPAssn	88	56	12	476	2,447
Veterans Admin. Center	Gen	Vet	50	50	..	...	826
Schenectady, 92,070—Schenectady							
Eastern New York Orthopedic Hosp.-School "Sunny View"	Orth	NPAssn	35	43	..	...	84
Ellis Hospital★+▲◇	Gen	NPAssn	369	330	60	1,559	12,067
St. Clare's Hospital	Gen	Church	179	116	35	799	4,716
Schenectady County [illegible]+▲	TB	County	130	116	..	...	133
[illegible]							
[illegible]	Gen	City	31	17	12	252	763
[illegible]							
The Hospital	Gen	CyCo	30	31	8	317	1,283
Silver Creek, 3,053—Chautauqua							
Rhinehart Memorial Hospital	Gen	Part	32	14	6	145	731
Sodus, 1,584—Wayne							
J. F. Myers Hospital	Gen	Indiv	27	9	9	224	587
Sonyea, 500—Livingston							
Craig Colony◇	Epil	State	2,279	2,151	4	17	181
Southampton, 4,022—Suffolk							
Southampton Hospital▲	Gen	NPAssn	124	73	23	553	2,957
Stamford, 1,158—Delaware							
Bathgate Hospital	Gen	NPAssn	19	6	6	117	523
Staten Island, 191,015—Richmond							
[illegible]	Iso	City	36	12	..	...	290
[illegible] ▲	Gen	NPAssn	117	78	14	461	2,659
[illegible] ▲	Gen	Church	247	226	33	1,412	7,351
Sea View Hospital+▲⊙	TB	City	1,402	1,488	..	...	1,867
Staten Island Hospital★+▲	Gen	NPAssn	218	151	54	1,653	5,950
U. S. Marine Hospital★+▲	Gen	USPHS	754	717	16	416	9,894
Veterans Admin. Hospital▲	Gen	Vet	692	754	..	...	4,035
Suffern, 3,992—Rockland							
Good Samaritan Hospital▲	Gen	Church	92	81	29	848	4,423

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Sunmount, 50—Franklin							
[illegible] ▲	TB	Vet	537	367	..	...	[illegible]
[illegible]							
[illegible] ▲	Iso	City	73	28	..	...	[illegible]
[illegible] ▲	Gen	NPAssn	215	182	36	1,795	[illegible]
[illegible] ▲	Gen	NPAssn	129	118	31	1,456	[illegible]
Hospital of the Good Shepherd★+▲⊙	Gen	NPAssn	200	163	..	...	[illegible]
[illegible]	Gen	NPAssn	68	45	10	35	[illegible]
[illegible] ▲	TB	State	228	213	..	...	[illegible]
[illegible]	Gen	NPAssn	28	17	4	12	511
St. Joseph's Hospital★+▲◇	Gen	Church	202	180	45	1,688	[illegible]
[illegible]	Mat	Church	26	17	28	723	[illegible]
[illegible] ▲	Gen	NPAssn	283	218	58	2,373	9,345
Syracuse Psychopathic Hospital+▲	Ment	State	60	57	..	...	563
Twin Elms	N&M	Part	18	18	..	...	209
Wieting-Johnson Memorial Hospital	CardChil	NPAssn	40	20	..	...	30
Tarrytown, 8,819—Westchester							
Tarrytown Hospital▲	Gen	NPAssn	57	36	13	329	1,576
Thiells, 700—Rockland							
Letchworth Village+	MeDe	State	3,821	4,323	6	10	395
Ticonderoga, 3,510—Essex							
Moses-Ludington Hospital▲	Gen	NPAssn	85	45	12	415	1,711
T [illegible]							
[illegible] ▲	Gen	NPAssn	133	107	35	944	4,561
[illegible]	N&M	NPAssn	66	49	..	...	192
Price Memorial Hospital	Unit of Samaritan Hospital						
St. Mary's Hospital★▲	Gen	Church	241	192	24	812	6,615
Samaritan Hospital★+▲◇	Gen	NPAssn	162	131	28	1,244	5,343
Trudeau, 600—Essex							
Trudeau Sanatorium+▲⊙	TB	NPAssn	200	168	..	...	190
Tupper Lake, 5,449—Franklin							
Mercy General Hospital	Gen	Church	35	18	10	197	735
Tuxedo Park, 2,500—Orange							
Tuxedo Memorial Hospital▲	Gen	NPAssn	33	19	7	115	794
Upton,—Suffolk							
Brookhaven National Laboratory Hospital▲	Gen	NPAssn	20	11	..	...	83
Utica, 101,479—Oneida							
Broadacres Sanatorium▲	TB	State	182	154	..	...	239
Children's Hospital Home▲	Orth	NPAssn	60	47	..	...	259
Faxton Hospital▲	Gen	NPAssn	128	96	27	897	5,027
Masonic Soldiers' and Sailors' [illegible]	Gen	NPAssn	170	129	..	...	431
[illegible] ▲	Gen	NPAssn	81	64	10	451	3,221
[illegible]	Gen	County	93	63	10	192	3,531
[illegible] ▲	Gen	Church	179	160	28	1,018	8,234
St. Luke's Hospital (St. Luke's-Memorial Hospital Center)▲◇	Gen	NPAssn	109	78	26	798	3,792
Utica State Hospital+▲◇	Ment	State	2,035	1,964	..	...	650
Valhalla, 2,200—Westchester							
Grasslands Hospital★+▲◇	Gen	County	800	546	15	195	4,497
[illegible]							
[illegible] ▲	Gen	County	110	76	20	609	3,114
Warwick, 2,670—Orange							
St. Anthony's Hospital▲	Gen	Church	50	26	14	125	950
Waterloo, 4,448—Seneca							
Waterloo Memorial Hospital	Gen	NPAssn	28	26	8	216	872
Watertown, 34,280—Jefferson							
House of the Good Samaritan▲◇	Gen	NPAssn	159	125	30	970	5,159
Jefferson County Sanat.+▲	TbChr	County	86	70	..	...	391
Mercy Hospital▲◇	Gen	Church	137	120	23	707	4,639
Waverly, 6,031—Tioga							
Tioga County General Hosp.▲	Gen	NPAssn	67	56	15	392	1,883
Wayland, 1,824—Steuben							
Wayland Hospital	Gen	NPAssn	22	10	4	86	408
[illegible]							
[illegible]	Gen	City	55	41	10	477	1,715
[illegible]							
[illegible] ▲	Ment	State	10,459	10,695	..	...	3,865
[illegible]	Gen	NPAssn	40	22	12	308	1,062
[illegible] ▲	Orth	State	250	249	..	...	472
[illegible] ▲	Gen	Army	165	112	15	303	3,642
[illegible]							
Burke Convalescent Home	Conv	NPAssn	170	124	..	...	2,095
[illegible] ▲	N&M	NPAssn	301	271	..	...	313
[illegible] ▲	Gen	Church	138	92	27	565	3,766
[illegible] ▲	Gen	NPAssn	188	140	30	824	6,073
Willard, 600—Seneca							
Willard State Hospital+▲◇	Ment	State	4,081	3,561	..	...	[illegible]
Wingdale, 500—Dutchess							
Harlem Valley State Hospital+▲◇	Ment	State	4,727	4,603	..	...	547
Woodhaven,—Queens							
St. Anthony's Hospital▲	TB	Church	400	340	..	...	503
Wynantskill, 200—Rensselaer							
Pawling Sanatorium	TB	County	118	84	..	...	85
Yonkers, 152,533—Westchester							
Gray Oaks Hospital	TB	City	45	40	..	...	52
House of Rest at Sprain Ridge	TB	NPAssn	76	64	..	...	122
St. John's Riverside Hosp.★▲◇	Gen	NPAssn	207	137	32	979	6,227
St. Joseph's Hospital★▲	Gen	Church	195	143	20	428	3,671
Yonkers General Hospital★▲	Gen	NPAssn	143	111	31	882	5,353
Yonkers Professional Hospital	Gen	Corp	164	119	28	694	4,343

NEW YORK—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albany, 134,382—Albany							
Albany's Hospital for Incurables	Incur	NPAssn	100	88	..	...	39
St. Margaret's House and Hospital for Babies	Inst	Church	55	39	..	...	67
Albion, 4,839—Orleans							
Albion State Training School	MeDe	State	460	210	2	8	45
Alden, 1,234—Erie							
Erie County Penitentiary Hospital	Inst	County	27	10	..	...	129
	Gen	Indiv	14	5	5	14	74
Westfield State Farm	Inst	State	40	39	..	...	835
	MeDe	Indiv	55	49	..	...	14
	Conv	Part	36	30	..	...	102
	Conv	Part	59	44	.	...	169
	Conv	Part	46	41		...	115
	Mat	Church	45	23	12	93	107
Crippled Children's Guild Hospital	Orth	NPAssn	65	69		..	62
	Mat	NPAssn	40	38	18	148	186
	Mat	Part	11	10	3	45	68
Corinth, 3,169—Saratoga							
Corinth Hospital	Gen	NPAssn	26	17	6	175	764
Eastview, 1,000—Westchester							
Solomon and Betty Loeb Memorial Home for Convalescents	Conv	NPAssn	110	74	..	...	1,063
Elmira, 49,690—Chemung							
ital..	Inst	State	97	19	..	...	1,033
ple.	Orth	NPAssn	55	27	.	...	107
Haverstraw, 5,816—Rockland							
Wee Haven	MeDe	Indiv	21	13	1	...	25
Hawthorne, 2,000—Westchester							
Rosary Hill Home	Cancer	Church	100	83	.	...	304
Industry, 350—Monroe							
Hospital of State Agriculture and Industrial School	Inst	State	50	11	..	...	623
Iroquois, 40—Erie							
Thomas Indian School Hosp.	Inst	State	31	14	..	...	385
Ithaca, 29,395—Tompkins							
	Gen	Indiv	15	12	..	...	615
	Orth	NPAssn	90	68	..	...	134
Jo							
	Mat	Indiv	25	23	4	49	96
Keene Valley, 311—Essex							
Keene Valley Neighborhood House and Hospital	Gen	NPAssn	11	5	5	77	179
k							
	MeDe	Indiv	18	18	..	...	18
	Conv	Church	70	54	..	...	353
Camp	Conv	State	610	365	..	...	2,886
Napanoch, 750—Ulster							
Institution for Male Defective Delinquents	MeDe	State	28	12	..	...	684
Newark, 10,275—Wayne							
Newark State School	MeDe	State	2,871	2,790	9	8	273
New York City, 4,927,737—New York							
	Incur	NPAssn	316	316	..	...	77
	Conv	NPAssn	84	64	..	...	510
Daughters of Israel	Inst	NPAssn	130	125	..	...	457
Home for Dependents	Inst	City	1,730	1,670	..	...	716
House of the Holy Comforter	Chr	Church	91	72	..	...	21
National Hospital for Speech Disorders	Speech	NPAssn	...	227	..	...	3,941
St. Rose's Free Home for		Church	91	77	..	...	320
		City	36	8	..	...	58
		-Nassau					
		Corp	19	19	..	...	71
e	Conv	Church	35	23	..	...	41
—Westchester							
	N&M	Corp	34	20	..	...	46
O							
Home	Inst	State	71	75	..	...	208
Pleasantville, 4,843—Westchester							
Pleasantville Cottage School	Inst	NPAssn	24	4	..	...	337
Poughkeepsie, 40,975—Dutchess							
Baldwin House (Vassar College Infirmary)	Inst	NPAssn	35	9	..	...	609
Queens Village,—Queens							
Queens Village Sanatorium	Gen	Indiv	12	9	..	...	87
Rochester, 331,252—Monroe							
Convalescent Hospital for Children	Conv	NPAssn	52	28	..	...	82
Knorr Sanitarium	Conv	Indiv	35	33	..	...	120
Saranac Lake, 6,900—Franklin							
Franklin Manor	TB	Indiv	14	8	..	...	20

NEW YORK—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
	Mat	Indiv	50	25	54	1,152	1,269
	Iso	City	35	13	..	...	484
and Hospital	Inst	County	71	70	..	...	154
Springville, 3,313—Erie							
Bertrand Chaffee Hospital	Gen	NPAssn	30	14	12	349	901
Staten Island, 191,015—Richmond							
New York City Farm Colony	Inst	City	1,173	1,160	..	...	577
Sailors' Snug Harbor Hospital	Gen	NPAssn	165	91	..	...	287
State School,—Orange							
Hospital of New York State Training School for Boys	Inst	State	24	2	..	...	598
Syracuse, 220,067—Onondaga							
Syracuse State School	MeDe	State	1,160	975	..	...	118
Tupper Lake, 5,449—Franklin							
American Legion Mountain Camp	Conv	NPAssn	75	50	..	...	124
	Orth	NPAssn	70	57	..	...	91
Wallkill, 800—Ulster							
Wallkill State Prison Hospital	Inst	State	19	3	..	...	260
Wassaic, 350—Dutchess							
Wassaic State School▲	MeDe	State	4,449	4,647	7	7	247
Williamsville, 4,624—Erie							
	Chil	NPAssn	60	47	..	...	121
	Inst	State	64	43	..	...	919

NORTH CAROLINA

Hospitals and Sanatoriums							
Ahoskie, 3,568—Hertford							
Roanoke-Chowan Hospital	Gen	NPAssn	50	33	12	294	1,971
Albemarle, 11,751—Stanly							
Stanly County Hospital	Gen	NPAssn	100	..	30	Estab. 1950	
	Gen	Indiv	28	19	12	219	1,581
▲	Gen	NPAssn	92	61	20	718	4,171
	N&M	Corp	150	87	..	...	953
	Gen	NPAssn	37	21	8	201	949
▲	Gen	NPAssn	45	35	3	...	1,647
▲	N&M	NPAssn	85	68	..	...	331
▲	Gen	NPAssn	184	133	35	1,031	6,229
St. Joseph's Hospital▲	Gen	Church	127	85	38	1,215	5,261
	Gen	NPAssn	101	47	10	248	2,747
	TB	Indiv	22	17	..	...	16
Banner Elk, 344—Avery							
Grace Hospital▲	Gen	Church	70	42	15	315	2,379
P be							
	TB	NPAssn	18	3	..	...	5
▲	TB	State	300	283	..	...	280
Boiling Springs, 1,147—Cleveland							
Gardner-Webb College Community Health Center	Gen	NPAssn	12	4	3	63	144
Boone, 2,964—Watauga							
Watauga Hospital	Gen	NPAssn	50	20	12	351	1,484
B							
	TB	County	25	22	.	...	30
	Gen	NPAssn	62	54	12	433	3,320
B							
State Hospital	Ment	State	1,599	1,368	..	.	332
Camp Lejeune,—Craven							
U. S. Naval Hospital▲	Gen	Navy	850	245	24	635	4,104
Charlotte, 133,219—Mecklenburg							
Charlotte Eye, Ear and Throat Hospital▲	ENT	Part	34	20	..	...	2,798
Charlotte Memorial Hosp.★+▲◇	Gen	NPAssn	408	321	32	1,048	11,879
Mercy Hospital★▲◇	Gen	Church	240	244	75	1,813	11,605
Presbyterian Hospital+▲◇	Gen	Church	248	239	39	1,424	8,639
	Gen	IA	28	15	7	109	698
Cherry Point,—Craven							
U. S. Marine Corps Air Station	Gen	Navy	50	23	14	445	2,278
Hospital	Gen	NPAssn	100	...	32	Estab. 1950	
Columbia, 1,157—Tyrrell							
Columbia Hospital	Gen	Indiv	21	2	7	158	797
Concord, 16,720—Cabarrus							
Cabarrus County Hospital◇	Gen	County	175	170	50	1,523	10,097
Crossnore, 266—Avery							
Garrett Memorial Hospital	Gen	NPAssn	18	7	4	60	345
Dunn, 6,325—Harnett							
Dunn Hospital	Gen	NPAssn	55	43	12	641	3,057
Durham, 70,307—Durham							
Duke Hospital★+▲◇	Gen	NPAssn	549	437	55	1,318	15,524
Durham County Tuberculosis Sanatorium	TB	County	56	51	..	...	45
Eastern Medical Center	Ven	State	150	85	..	...	2,098
Lincoln Hospital★+▲◇	Gen	NPAssn	90	64	18	395	2,910
McPherson Hospital+▲	ENT	Indiv	45	23	..	...	2,070
Watts Hospital★+▲◇	Gen	NPAssn	200	192	25	1,306	10,528
Elkin, 2,844—Surry							
Hugh Chatham Memorial Hospital	Gen	Church	74	43	24	784	2,908

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Erwin, 3,500—Harnett							
Good Hope Hospital	Gen	NPAssn	35	18	12	443	1,436
Fayetteville, 34,605—Cumberland							
Cumberland County Sanatorium	TB	County	32	31	..	...	44
Highsmith Hospital▲◇	Gen	NPAssn	120	110	24	711	5,961
Veterans Admin. Hospital▲	Gen	Vet	300	275	..	...	3,482
Fletcher, 500—Henderson							
Mountain Sanitarium and Hospital▲◇	Gen	NPAssn	70	48	10	155	1,361
Fort Bragg,—Cumberland							
U. S. Army Hospital▲	Gen	Army	500	296	27	1,461	9,835
Franklin, 1,964—Macon							
Angel Clinic-Hospital	Gen	Indiv	30	20	3	54	892
Angel Hospital	Gen	NPAssn	56	20	8	106	1,162
Gastonia, 23,003—Gaston							
Garrison General Hospital	Gen	NPAssn	50	35	18	899	3,516
Gaston County Negro Hospital	Gen	County	35	28	6	253	1,000
Gaston Memorial Hospital◇	Gen	NPAssn	65	50	15	683	3,395
North Carolina Orthopedic Hospital▲⊙	Orth	State	160	140	..	...	374
Goldsboro, 21,399—Wayne							
State Hospital	Ment	State	2,775	2,750	..	...	505
Wayne County Memorial Hosp.	Gen	County	130	77	25	752	4,362
Greensboro, 73,703—Guilford							
Piedmont Memorial Hospital.	Gen	NPAssn	61	37	17	338	2,243
L. Richardson Memorial Hospital▲◇	Gen	NPAssn	83	53	18	641	3,063
St. Leo's Hospital▲◇	Gen	Church	93	72	20	916	4,322
Sternberger Hospital for Women and Children+▲⊙.	Gen	NPAssn	49	40	13	377	2,762
Wesley Long Hospital	Gen	NPAssn	100	88	20	632	5,249
Greenville, 16,713—Pitt							
Pitt County Memorial Hospital	Gen	County	120	...	30	Estab. 1950	
Hamlet, 4,917—Richmond							
Hamlet Hospital◇	Gen	NPAssn	100	61	15	556	4,180
Henderson, 10,942—Vance							
Jubilee Hospital	Gen	Church	37	13	5	199	1,861
Maria Parham Hospital▲	Gen	NPAssn	52	38	17	462	2,866
Hendersonville, 6,061—Henderson							
Patton Memorial Hospital▲	Gen	NPAssn	47	35	18	488	2,497
Hickory, 14,691—Catawba							
Hickory Memorial Hospital	Gen	NPAssn	53	37	18	554	3,445
Richard Baker Hospital	Gen	Indiv	75	43	24	592	2,838
High Point, 39,930—Guilford							
High Point Memorial Hosp.▲◇.	Gen	NPAssn	122	91	38	1,408	5,925
Huntersville, 763—Mecklenburg							
Mecklenburg Sanatorium▲	TB	County	154	113	..	...	197
Jacksonville, 3,928—Onslow							
Onslow County Hospital	Gen	County	60	33	17	518	2,663
Jamestown, 900—Guilford							
Guilford County Sanatorium▲.	TB	County	120	111	.	. .	234
Jefferson, 304—Ashe							
Ashe County Memorial Hosp.	Gen	NPAssn	30	22	12	502	1,546
Kinston, 18,278—Lenoir							
Memorial General Hospital▲◇	Gen	NPAssn	73	60	12	678	3,852
Parrott Memorial Hospital	Gen	NPAssn	50	30	15	514	2,506
Laurinburg, 7,126—Scotland							
Scotland County Memorial Hospital	Gen	NPAssn	100	...	20	...	...
Leaksville, 4,057—Rockingham							
[illegible]▲	Gen	NPAssn	45	22	5	509	1,574
Le[illegible]							
[illegible]	Gen	NPAssn	32	29	10	537	2,409
Dula Hospital	Gen	Indiv	29	23	6	183	1,836
West Harper Clinic-Hospital	Gen	Indiv	10	1	4	46	358
Lexington, 13,562—Davidson							
Lexington Memorial Hospital▲	Gen	NPAssn	80	49	30	743	4,223
Lincolnton, 5,419—Lincoln							
Gordon Crowell Memorial Hospital	Gen	Corp	66	30	14	300	1,936
Reeves Gamble Hospital	Gen	NPAssn	35	18	12	172	1,777
Lumberton, 9,164—Robeson							
Robeson County Memorial Hospital◇	Gen	NPAssn	155	100	30	1,139	7,276
[illegible]							
[illegible]	Gen	NPAssn	42	30	18	710	2,597
McCain,—Hoke							
North Carolina Sanatorium for the Treatment of Tuberculosis+▲◇	TB	State	550	526	..	...	650
Monroe, 10,113—Union							
Ellen Fitzgerald Hospital	Gen	NPAssn	80	64	18	900	4,972
Mooresville, 7,118—Iredell							
Lowrance Hospital▲◇	Gen	NPAssn	78	59	15	704	4,948
Morehead City, 5,055—Carteret							
Morehead City Hospital	Gen	City	52	35	17	488	2,551
Morganton, 8,252—Burke							
Broadoaks Sanatorium	N&M	Part	75	43	..	...	58
Grace Hospital▲◇	Gen	NPAssn	104	63	24	636	3,977
State Hospital	Ment	State	2,689	2,599	..	...	789
Mount Airy, 7,194—Surry							
Martin Memorial Hospital◇	Gen	NPAssn	75	60	15	578	4,065
Mount Olive, 3,728—Wayne							
Henderson-Crumpler Clinic Hospital	Mat	Part	12	3	12	466	550
Murphy, 2,429—Cherokee							
Petrie Hospital	Gen	NPAssn	35	13	12	214	891
Nashville, 1,301—Nash							
Nash County Tuberculosis Sanatorium	TB	County	33	24	..	...	63
New Bern, 15,784—Craven							
Good Shepherd Hospital	Gen	Church	58	15	8	130	1,035
Kafer Memorial Hospital	Gen	NPAssn	33	14	9	282	1,446
St. Luke's Hospital▲	Gen	Church	65	26	20	277	1,873

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Newton, 6,015—Catawba							
Catawba Hospital	Gen	NPAssn	100	58	12	...	3,553
North Wilkesboro, 4,370—Wilkes							
Wilkes County Tuberculosis Hospital	TB	County	32	20	..	...	55
Wilkes Hospital▲	Gen	NPAssn	60	32	16	575	2,625
Oteen, 1,200—Buncombe							
Veterans Admin. Hospital+▲⊙	TB	Vet	1,996	1,288	..	...	5,425
[illegible]							
[illegible]	Gen	NPAssn	38	24	14	275	[illegible]
[illegible]							
[illegible]	Gen	NPAssn	19	13	1	223	1,008
Pinebluff Sanitarium	N&M	Corp	50	28	..	...	252
Pinehurst, 1,600—Moore							
Moore County Hospital▲	Gen	NPAssn	80	66	20	517	3,347
Plymouth, 4,471—Washington							
Washington County Hospital	Gen	County	22	...	8	Estab. 1950	
Raleigh, 65,123—Wake							
Central Prison Hospital	Inst	State	134	78	..	...	1,404
[illegible]	Gen	Corp	50	46	10	378	2,222
[illegible]▲	Gen	NPAssn	304	263	48	1,027	11,250
[illegible]	Unit of State Hospital						
[illegible]▲	Gen	Church	100	71	20	508	2,640
[illegible]▲	Ment	State	2,669	2,222	..	...	1,244
Wake County Tuberculosis Sanatorium	TB	County	65	63	..	...	37
[illegible]							
[illegible]▲	Gen	NPAssn	79	48	18	720	3,135
Roanoke Rapids, 8,123—Halifax							
Roanoke Rapids Hospital◇	Gen	NPAssn	102	86	28	823	5,825
Rocky Mount, 27,644—Nash							
Atlantic Coast Line Hospital▲	Indus	NPAssn	50	27	..	...	799
Park View Hospital▲◇	Gen	NPAssn	110	71	20	560	3,545
Rocky Mount Sanitarium▲	Gen	NPAssn	76	48	12	417	2,577
Stone-Bell-Way-Robertson Clinic-Hospital	Gen	Part	22	14	8	237	1,255
Roseboro, 1,236—Sampson							
Brewer-Starling Clinic-Hospital	Gen	Part	9	3	5	242	371
Roxboro, 4,047—Person							
Person County Memorial Hospital	Gen	NPAssn	60	...	20	Estab. 1950	
Rutherfordton, 3,139—Rutherford							
Rutherford Hospital▲◇	Gen	NPAssn	64	48	11	516	3,727
[illegible]▲	Gen	NPAssn	120	135	40	1,671	8,710
Sanford, 10,004—Lee							
Lee County Hospital	Gen	County	54	50	26	826	3,447
[illegible]							
[illegible] Hospital	Gen	County	20	...	8	Estab. 1950	
[illegible]	Gen	County	100	66	20	1,068	5,097
[illegible]	Gen	NPAssn	50	24	13	188	1,227
Smithfield, 5,574—Johnston							
Johnston County Hospital	Gen	NPAssn	35	22	12	468	1,821
Southport, 1,744—Brunswick							
J. Arthur Dosher Memorial Hospital	Gen	CyCo	40	35	7	152	1,283
[illegible]							
[illegible]	Gen	Indiv	22	14	9	260	1,315
Davis Hospital▲◇	Gen	NPAssn	165	134	45	622	4,672
Swannanoa, 2,500—Buncombe							
Veterans Admin. Hospital▲	Unit of Veterans Admin. Hospital, Oteen, North Carolina						
Sylva, 1,409—Jackson							
C. J. Harris Community Hospital	Gen	NPAssn	45	26	10	265	1,806
Tarboro, 8,069—Edgecombe							
[illegible]	Gen	Indiv	8	4	5	20	110
[illegible]▲	Gen	NPAssn	66	33	14	246	2,018
[illegible]	Gen	Indiv	20	8	5	39	315
[illegible]							
[illegible]	Gen	NPAssn	20	...	8	Estab. 1950	
[illegible]							
[illegible]	Gen	NPAssn	47	27	12	374	1,627
Troy, 2,215—Montgomery							
Montgomery Memorial Hosp.	Gen	NPAssn	43	...	8	Estab. 1950	
Tryon, 1,984—Polk							
St. Luke's Hospital▲	Gen	NPAssn	30	10	8	157	726
Valdese, 2,735—Burke							
Valdese General Hospital	Gen	NPAssn	49	41	12	...	2,640
Wadesboro, 3,409—Anson							
[illegible]	Gen	NPAssn	40	31	10	367	1,700
[illegible]	Gen	Indiv	20	3	6	169	270
Washington, 9,616—Beaufort							
Fowle Memorial Hospital	Gen	Indiv	16	12	6	130	563
Tayloe Hospital	Gen	NPAssn	75	47	16	820	4,070
[illegible]							
[illegible]	Gen	County	72	41	15	983	2,747
[illegible]							
[illegible]	Gen	NPAssn	64	48	17	725	3,280
[illegible]							
[illegible]	Gen	NPAssn	50	...	10	Estab. 1950	
[illegible]							
[illegible]+	Chil	NPAssn	40	24	10	...	1,526
Bulluck Hospital-Clinic	Gen	NPAssn	25	19	..	...	915
Community Hospital▲◇	Gen	CyCo	105	74	30	479	2,260
James Walker Memorial Hospital★+▲◇	Gen	NPAssn	300	220	50	1,600	10,355

Key to symbols and abbreviations is on page 124

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Wilson, 22,964—Wilson							
Carolina General Hospital▲◇..	Gen	NPAssn	54	40	15	576	2,299
Eastern North Carolina Sanatorium▲..............	TB	State	195	190	..	...	175
Mercy Hospital................	Gen	NPAssn	36	17	8	204	1,080
Wilson County Tuberculosis [illegible]	TB	County	48	38	..	...	38
[illegible]	Gen	NPAssn	59	50	10	302	2,492
[illegible] ▲	Gen	City	180	153	42	1,604	7,499
[illegible]	Gen	County	36	12	6	55	500
[illegible] ▲	TB	County	134	94	..	...	74
[illegible] ▲	N&M	NPAssn	37	19	..	...	363
Kate Bitting Reynolds Memorial Hospital★+▲◇.....	Gen	City	205	146	30	944	5,241
North Carolina Baptist Hospital★+▲◇..............	Gen	Church	260	235	55	1,155	8,726

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]	Orth	NPAssn	60	50	..	1	291
Dorothy Carolyn Hospital.....	Mat	Indiv	8	2	4	133	263
Candler, 60—Buncombe							
Pisgah Sanitarium and Hospital.....................	Gen	Church	30	18	4	34	370
Davidson, 2,418—Mecklenburg							
[illegible]	Inst	NPAssn	25	2	..	...	165
[illegible]							
North Carolina Cerebral Palsy Hospital.....................	Orth	State	40	...	..	Estab. 1950	
Greensboro, 73,703—Guilford							
Central Carolina Convalescent Hospital.......	Orth	NPAssn	120	53	..	...	51
Henderson, 10,942—Vances							
Scott Parker Sanatorium......	TB	County	14	7	..	...	8
[illegible]	Gen	Indiv	18	9	15	310	992
Caswell Training School.......	MeDe	State	934	875	..	...	180
Raleigh, 65,123—Wake							
Clark Hall Hospital...........	Inst	State	75	7	..	...	709
McCauley Private Hospital....	Gen	Indiv	10	3	4	42	119
Tarboro, 8,069—Edgecombe							
Edgecombe County [illegible]	TB	County	27	24	..	...	32
[illegible]	Gen	Indiv	18	10	5	114	1,092

NORTH DAKOTA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Belcourt, 200—Rolette							
Turtle Mountain Hospital.....	Gen	IA	42	25	10	166	1,111
Bismarck, 18,544—Burleigh							
Bismarck Hospital+▲◇	Gen	NPAssn	153	123	24	522	4,640
[illegible] ▲	Gen	Church	243	180	32	1,088	7,325
[illegible]	Gen	Church	80	48	15	596	1,935
[illegible]	Gen	Church	25	12	5	140	521
St. Luke's Hospital............	Gen	Church	33	6	8	123	767
Devils Lake, 6,419—Ramsey							
General Hospital▲............	Gen	NPAssn	42	26	8	139	921
Mercy Hospital▲..............	Gen	Church	85	43	25	412	2,207
Dickinson, 7,457—Stark							
St. Joseph's Hospital▲.........	Gen	Church	93	64	26	936	4,192
Drayton, 688—Pembina							
St. Elizabeth's Hospital.......	Gen	Church	14	10	5	71	622
Elbowoods, 175—McLean							
Fort Berthold Indian Hosp....	Gen	IA	18	10	6	61	475
Elgin, 583—Grant							
Lorenzen Memorial Hospital...	Gen	NPAssn	31	16	12	185	996
Fargo, 37,981—Cass							
St. John's Hospital★▲◇........	Gen	Church	173	138	35	1,258	6,592
St. Luke's Hospital★+▲◇......	Gen	Church	136	127	20	950	6,988
Veterans Admin. Center▲......	Gen	Vet	319	212	..	...	2,430
Fort Totten, 100—Benson							
Fort Totten Indian Hospital...	Gen	IA	31	13	4	56	731
Fort Yates, 1,000—Sioux							
Standing Rock Indian Hosp...	Gen	IA	47	22	7	67	781
Grafton, 6,680—Walsh							
Grafton Deaconess Hospital	Gen	Church	65	43	15	634	2,072
Gra							
G							
[illegible] ▲	Gen	NPAssn	140	97	25	855	5,729
St. Michael's Hospital▲........	Gen	Church	77	72	20	598	3,422
Harvey, 2,330—Wells							
St. Aloisius Hospital..........	Gen	Church	44	27	11	340	1,758
Hettinger, 1,755—Adams							
Community Memorial Hospital	Gen	NPAssn	20	...	8	Estab. 1950	
Jamestown, 10,601—Stutsman							
Jamestown Hospital..........	Gen	NPAssn	76	50	12	336	2,557
State Hospital for the Insane▲.....................	Ment	State	2,210	2,103	..	...	521
Trinity Hospital▲............	Gen	Church	96	58	18	397	2,391
Kenmare, 1,711—Ward							
Kenmare Deaconess Hospital..	Gen	Church	33	18	10	203	1,215
Langdon, 1,829—Cavalier							
Mercy Hospital................	Gen	Church	35	17	12	278	1,078

NORTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Mandan, 7,268—Morton							
Mandan Deaconess Hospital...	Gen	Church	35	25	15	...	...
Mayville, 1,777—Traill							
Union Hospital................	Gen	NPAssn	19	17	7	140	645
Minot, 21,924—Ward							
St. Joseph's Hospital▲◇.......	Gen	Church	134	85	19	714	4,973
Trinity Hospital★+▲◇.........	Gen	Church	188	156	32	883	6,223
Veterans Admin. Hospital▲....	Gen	Vet	162	...	..	Estab. 1950	
New Rockford, 2,187—Eddy							
City Hospital................	Gen	Church	40	29	9	190	1,106
Northwood, 1,168—Grand Forks							
Northwood Deaconess Hospital	Gen	Church	25	13	6	146	897
Oakes, 1,759—Dickey							
St. Joseph's Hospital..........	Gen	Church	16	8	7	105	329
Richardton, 682—Stark							
Memorial Hospital.............	Gen	Church	26	...	7	Estab. 1950	
Rolette, 460—Rolette							
Community Hospital..........	Gen	NPAssn	18	10	4	49	492
Rolla, 1,173—Rolette							
Rolla Community Hospital....	Gen	City	24	16	7	139	1,108
Rugby, 2,879—Pierce							
Good Samaritan Hospital▲◇...	Gen	Church	70	55	15	398	2,951
San Haven,—Rolette							
North Dakota State Tuberculosis Sanatorium▲...	TB	State	350	267	..	...	252
Sharon, 371—Steele							
Sharon Community Hospital..	Gen	City	15	7	5	35	315
Valley City, 6,823—Barnes							
Mercy Hospital▲◇.............	Gen	Church	100	62	15	515	2,859
Wahpeton, 5,090—Richland							
St. Mary Hospital.............	Gen	Church	23	22	6	158	1,087
Williston, 7,353—Williams							
Good Samaritan Hospital▲....	Gen	NPAssn	37	24	12	310	1,541
Mercy Hospital▲◇.............	Gen	Church	75	55	20	395	3,072

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Fargo, 37,981—Cass							
City Detention Hospital.......	Iso	City	10	1	..	...	50
Florence Crittenton Home.....	Mat	NPAssn	56	16	6	66	100
Grafton, 6,680—Walsh							
Grafton State School..........	MeDe	State	1,040	1,009	..	...	52
Hazen, 1,235—Mercer							
Memorial Hospital.............	Gen	Church	32	17	8	193	2,417
Powers Lake, 464—Burke							
Powers Lake Hospital.........	Gen	City	10	8	5	78	250

OHIO

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Akron, 273,189—Summit							
Children's Hospital+▲⊙........	Chil	NPAssn	160	126	..	...	6,978
City Hospital★+▲◇............	Gen	NPAssn	410	397	80	4,022	16,452
Edwin Shaw Sanatorium▲.....	TB	County	120	121	..	...	162
Peoples Hospital★+▲◇.........	Gen	NPAssn	210	211	50	2,653	12,744
St. Thomas Hospital★+▲◇.....	Gen	Church	205	175	30	2,064	9,028
Alliance, 26,112—Stark							
Alliance City Hospital▲.......	Gen	NPAssn	90	72	22	1,063	3,793
Amherst, 3,523—Lorain							
Pleasant View Sanatorium.....	TB	County	84	76	..	...	79
Apple Creek, 510—Wayne							
Apple Creek State School......	Ment	State	1,300	1,032	..	...	556
Ashland, 14,277—Ashland							
Samaritan Hospital▲◇.........	Gen	NPAssn	48	39	15	682	2,148
Ashtabula, 23,093—Ashtabula							
Ashtabula General Hospital...	Gen	NPAssn	72	61	23	898	3,463
Athens, 11,604—Athens							
Athens State Hospital.........	Ment	State	1,749	1,687	..	...	363
[illegible]	Gen	Corp	59	...	9	545	...
[illegible]	Gen	NPAssn	78	55	30	989	3,566
[illegible]	Gen	NPAssn	21	14	7	296	886
[illegible]	Gen	City	39	33	13	363	1,568
[illegible] ▲	Gen	NPAssn	56	39	12	516	1,859
[illegible]	Gen	NPAssn	41	24	11	307	1,136
[illegible] ▲	Gen	NPAssn	107	78	34	876	3,824
Veterans Admin. Hospital+▲..	TB	Vet	251	250	..	...	381
Bryan, 6,405—Williams							
Cameron Hospitals............	Gen	NPAssn	24	19	9	393	1,131
Bucyrus, 10,289—Crawford							
Bucyrus City Hospital........	Gen	City	51	46	15	459	2,281
[illegible]	Ment	State	2,350	2,315	..	...	643
[illegible]	Gen	NPAssn	114	38	23	138	1,451
[illegible]	Gen	NPAssn	35	20	8	...	1,096
[illegible]							
[illegible] ★+▲......	Gen	NPAssn	301	229	72	2,634	10,506
[illegible]	Unit of Mercy Hospital						
[illegible] ★+▲..........	Gen	Church	235	209	45	2,287	10,415
Molly Stark Sanatorium▲.....	TB	County	150	146	..	...	132
Celina, 5,686—Mercer							
Gibbons Hospital.............	Gen	NPAssn	41	27	16	774	1,914
Otis Hospital................	Gen	NPAssn	25	15	5	218	1,098
Chagrin Falls, 3,054—Cuyahoga							
Windsor Hospital+▲...........	N&M	Corp	100	87	..	...	680
Chillicothe, 20,121—Ross							
Chillicothe Hospital▲..........	Gen	NPAssn	55	49	17	777	2,429
Federal Reformatory Hosp.▲..	Inst	USPHS	70	18	..	...	754

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number Births	Admissions†
Mount Logan Sanatorium	TB	County	78	77	..	...	45
Veterans Admin. Hospital▲	Ment	Vet	2,152	2,109	..	...	610
Cincinnati, 500,510—Hamilton							
Bethesda Hospital★+▲◇	Gen	Church	218	201	60	2,807	9,022
Children's Hospital+▲⊙	Chil	Church	196	140	..	...	6,301
Christ Hospital★+▲◇	Gen	Church	374	338	45	2,223	11,169
Christian R. Holmes Hospital▲	Gen	City	52	44	..	...	1,402
Cincinnati General Hospital★+▲◇	Gen	City	865	613	65	3,118	15,454
Cincinnati Sanitarium▲	N&M	Corp	100	101	.	...	545
Deaconess Hospital★+▲◇	Gen	Church	168	139	30	944	5,165
Dunham Hospital+▲	TB	County	541	485	.	.	499
Good Samaritan Hospital★+▲◇	Gen	Church	556	470	80	3,867	16,783
Hamilton County Chronic Disease Hospital	Chr	County	364	360	..	.	391
Jewish Hospital★+▲◇	Gen	NPAssn	265	267	45	2,502	10,561
Longview State Hospital+▲⊙	Ment	State	3,296	3,118	..	...	745
Ohio Hospital for Women and Children	Unit of Bethesda Hospital						
Our Lady of Mercy Hospital▲	Gen	Church	54	47	18	1,050	2,599
St. Francis Hospital	Gen	Church	300	265	..	...	3,002
St. Mary's Hospital★+▲	Gen	Church	190	160	20	544	5,071
Circleville, 8,655—Pickaway							
Berger Municipal Hospital	Gen	CyCo	25	21	10	388	1,191
Cleveland, 905,636—Cuyahoga							
Babies and Childrens Hosp.▲	Unit of University Hospitals						
Booth Memorial Home and Hospital▲	Mat	Church	27	16	28	776	892
City Hospital★+▲◇	Gen	City	1,050	824	52	1,731	12,385
Cleveland Clinic Hospital+▲	Gen	NPAssn	323	285	..	...	9,143
Cleveland State Hospital+	Ment	State	2,800	2,492	..	...	617
Cleveland State Receiving Hospital+⊙	Ment	State	375	340	..	...	1,001
Evangelical Deaconess Hospital★▲	Gen	Church	138	120	34	1,545	7,003
Fairview Park Hospital★+▲◇	Gen	Church	150	143	51	2,435	7,656
Glenville Hospital★▲	Gen	NPAssn	120	95	30	929	4,450
Grace Hospital▲	Gen	NPAssn	64	42	12	386	2,265
Huron Road Hospital	See East Cleveland						
John H. Lowman Memorial Pavilion	Unit of City Hospital						
Lakeside Hospital▲	Unit of University Hospitals						
Leonard C. Hanna House	Unit of University Hospitals						
Lutheran Hospital★+▲◇	Gen	Church	193	144	48	1,570	6,390
Maternity Hospital	Unit of University Hospitals						
Mt. Siani Hospital★+▲◇	Gen	NPAssn	302	224	45	2,073	11,160
Polyclinic Hospital▲	Gen	NPAssn	105	84	24	763	5,178
St. Alexis Hospital★+▲◇	Gen	Church	234	208	21	1,045	9,387
St. Ann's Maternity Hosp.+▲⊙	Mat	Church	42	36	42	1,797	1,953
St. John's Hospital★+▲◇	Gen	Church	236	202	45	1,992	9,027
St. Luke's Hospital★+▲◇	Gen	Church	388	331	65	2,823	15,592
St. Vincent Charity Hospital★+▲◇	Gen	Church	296	252	..	...	7,733
Sunny Acres, Cuyahoga County Tuberculosis Hospital+▲	TB	County	390	376	..	...	370
U. S. Marine Hospital★▲	GenTb	USPHS	254	201	..	...	2,509
University Hospitals★+▲◇	Gen	NPAssn	792	636	115	4,554	22,691
Veterans Admin. Hospital+▲	Gen	Vet	1,000	836	..	..	8,171
Woman's Hospital+▲	Gen	NPAssn	116	82	24	667	4,300
Cleveland Heights, 58,782—Cuyahoga							
Doctors Hospital★+	Gen	NPAssn	185	135	25	557	6,572
Coldwater, 2,208—Mercer							
Our Lady of Mercy Hospital	Gen	Church	40	...	19	Estab. 1950	
[illegible]	Chr	County	146	144	..	...	181
[illegible]▲	TB	County	379	327	..	...	311
[illegible]▲	Chil	NPAssn	196	133	..	...	5,300
Columbus State Hospital+▲	Ment	State	2,400	2,422	..	...	894
Grant Hospital★+▲◇	Gen	NPAssn	289	233	37	2,101	10,453
McMillen Sanitarium	N&M	Corp	40	31	..	...	345
Mercy Hospital▲	Gen	NPAssn	65	55	15	436	2,320
Mount Carmel Hospital★+▲◇	Gen	Church	280	239	50	2,606	10,874
Ohio State University Hospital★+▲◇	Gen	State	279	225	35	2,148	9,241
St. Ann's Maternity Hosp.+▲	Mat	Church	30	26	30	2,053	2,333
St. Anthony Hospital▲	Gen	Church	200	183	..	...	2,679
St. Francis Hospital★▲◇	Gen	Church	162	132	..	...	4,190
White Cross Hospital★+▲◇	Gen	Church	353	266	62	2,884	13,232
Conneaut, 10,073—Ashtabula							
Brown Memorial Hospital	Gen	NPAssn	38	30	10	...	2,118
Coshocton, 11,626—Coshocton							
Coshocton Memorial Hospital▲	Gen	NPAssn	61	40	22	671	2,775
Crestline, 4,590—Crawford							
Crestline Emergency Hospital	Gen	NPAssn	22	15	4	118	705
Cuyahoga Falls, 29,076—Summit							
Summit County Receiving Hospital	Ment	State	65	42	..	...	406
Dayton, 243,108—Montgomery							
College Hill Hospital	Gen	Indiv	30	7	..	...	120
Dayton State Hospital▲○	Ment	State	1,815	1,640	..	...	666
Good Samaritan Hospital▲◇	Gen	Church	315	257	65	4,177	13,003
Miami Valley Hospital★+▲◇	Gen	NPAssn	424	376	56	3,793	16,808
[illegible]	Unit of St. Elizabeth Hospital						
[illegible]▲	Gen	Church	325	261	40	2,738	12,178
[illegible]▲	TB	Counties	158	155	.	...	203
Veterans Admin. Center+▲	Gen	Vet	1,316	951	..	...	6,895
Defiance, 11,270—Defiance							
Defiance Municipal Hospital	Gen	City	34	27	11	675	1,863
Delaware, 11,783—Delaware							
Jane M. Case Hospital	Gen	NPAssn	52	42	10	411	2,234
Dennison, 4,435—Tuscarawas							
Twin City Hospital	Gen	NPAssn	41	29	12	536	1,768
Dover, 9,787—Tuscarawas							
Union Hospital▲	Gen	NPAssn	65	52	15	955	3,096

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
East Cleveland, 39,875—Cuyahoga							
Huron Road Hospital★+▲◇	Gen	NPAssn	284	283	78	2,840	10,55
East Liverpool, 24,072—Columbiana							
East Liverpool City Hospital▲◇	Gen	NPAssn	126	84	24	1,249	4,261
Elyria, 30,197—Lorain							
Elyria Memorial Hospital and Gates Hospital for Crippled Children+▲◇	Gen	NPAssn	142	111	33	1,257	6,13
Findlay, 23,806—Hancock							
Blanchard Valley Hospital▲	Gen	NPAssn	79	65	18	986	4,09
Fremont, 16,533—Sandusky							
Community Hospital	Gen	NPAssn	29	13	6	81	50
Memorial Hospital▲	Gen	NPAssn	110	72	32	887	4,07
Galion, 9,921—Crawford							
Galion City Hospital	Gen	City	35	26	12	478	1,6
Gallipolis, 7,842—Gallia							
Gallipolis State Institute	Epil	State	2,373	2,012	..	...	1
Holzer Hospital▲◇	Gen	NPAssn	75	70	12	618	4,05
Garfield Heights, 21,606—Cuyahoga							
Marymount Hospital	Gen	Church	125	92	36	688	4,4
Green Springs, 1,018—Sandusky and Seneca							
[illegible]	TB	Indiv	97	85	..	...	16
[illegible]▲	Gen	NPAssn	54	43	16	681	2,19
[illegible]▲	Gen	NPAssn	115	103	25	1,133	5,75
Mercy Hospital★+▲◇	Gen	Church	300	224	45	1,358	8,73
Ironton, 16,329—Lawrence							
Lawrence County General Hospital	Gen	County	116	67	31	...	3,68
Kenton, 8,467—Hardin							
McKitrick Hospital	Gen	NPAssn	33	28	10	234	1,06
San Antonio Hospital	Gen	Church	75	52	16	...	2,55
Lakewood, 67,878—Cuyahoga							
Lakewood Hospital★+▲	Gen	City	129	117	28	1,210	5,8
Lancaster, 24,140—Fairfield							
Lancaster-Fairfield Hosp.▲◇	Gen	CyCo	72	72	22	981	4,6
Lima, 49,880—Allen							
District Tuberculosis Hospital	TB	Counties	126	115	..	...	14
[illegible]▲◇	Gen	NPAssn	237	163	37	1,322	7,61
[illegible]	Ment	State	1,200	1,208	..	..	59
[illegible]▲	Gen	Church	300	210	50	1,869	9,60
Lodi, 1,516—Medina							
Lodi Hospital	Gen	NPAssn	40	26	10	410	1,6
Logan, 5,965—Hocking							
Hocking Valley Hospital	Gen	NPAssn	33	20	10	331	1,15
Lorain, 50,819—Lorain							
St. Joseph's Hospital▲	Gen	Church	148	103	30	1,715	6,13
Macedonia, 734—Summit							
Hawthornden State Hospital	Ment	State	1,204	1,140	..	...	20
Mansfield, 43,363—Richland							
Mansfield General Hospital▲◇	Gen	NPAssn	175	162	37	1,758	7,36
People's Hospital	Gen	NPAssn	50	38	..	...	1,38
Richland County [illegible]	TB	County	86	81	..	...	111
[illegible]	Gen	NPAssn	74	62	12	878	3,226
Marion, 33,786—Marion							
Marion City Hospital	Gen	City	100	87	22	1,284	4,437
Sawyer Sanatorium▲	Nerv	Indiv	50	28	..	...	116
Martins Ferry, 13,214—Belmont							
Martins Ferry Hospital▲◇	Gen	NPAssn	120	104	30	1,015	5,132
Massillon, 29,524—Stark							
Massillon City Hospital▲◇	Gen	NPAssn	152	137	34	1,188	6,309
Massillon State Hospital+▲⊙	Ment	State	3,131	3,084	..	...	879
McConnelsville, 1,929—Morgan							
Rocky Glen Sanatorium	TB	Corp	135	127	..	...	157
Medina, 5,086—Medina							
Medina Community Hospital	Gen	NPAssn	36	29	12	350	1,674
Middletown, 33,634—Butler							
Middletown Hospital▲◇	Gen	NPAssn	148	118	37	1,670	6,206
Millersburg, 2,390—Holmes							
Holmes County Joel E. Pomerene Memorial Hospital	Gen	County	32	17	10	506	1,462
Mount Vernon, 12,021—Knox							
Avalon Sanatorium	TB	NPAssn	91	85	..	..	110
Memorial Hospital	Gen	NPAssn	62	41	9	329	2,349
Mercy Hospital	Gen	Church	75	61	17	586	3,188
Mount Vernon State Hosp.▲	TB	State	580	533	..	...	214
Munroe Falls, 511—Summit							
Summit County Home Hosp.	Chr	County	137	133	..	...	90
Napoleon, 5,326—Henry							
S. M. Heller Memorial Hosp.	Gen	City	22	17	8	398	1,267
Nelsonville, 4,845—Athens							
Mount St. Mary Hospital	Gen	Church	74	...	20	Estab. 1950	
Newark, 34,178—Licking							
Licking County Tuberculosis Sanatorium	TB	County	51	43	..	...	76
Newark Hospital▲	Gen	NPAssn	119	78	23	1,205	5,032
New Philadelphia, 12,966—Tuscarawas							
Tuscarawas Valley Sanatorium	TB	County	34	30	..	...	34
Oberlin, 6,457—Lorain							
Allen Hospital, Oberlin College▲	Gen	NPAssn	45	32	11	300	1,917
Oxford, 6,926—Butler							
Wade MacMillan Hospital	Inst	State	66	6	..	...	1,673
Painesville, 14,365—Lake							
Lake County Memorial Hospital	Gen	County	125	86	30	848	4,909
Perrysburg, 3,989—Wood							
Rhinefrank Hospital	Goiter	Indiv	11	2	..	...	73
Piqua, 17,421—Miami							
Memorial Hospital▲	Gen	NPAssn	82	64	14	941	2,698

Key to symbols and abbreviations is on page 124

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Pomeroy, 3,666—Meigs							
Meigs General Hospital	Gen	Corp	21	15	5	189	970
Port Clinton, 5,538—Ottawa							
H. B. Magruder Memorial Hospital	Gen	NPAssn	43	41	17	435	2,133
Portsmouth, 36,663—Scioto							
Mercy Hospital◇	Gen	Church	81	72	16	872	4,025
Portsmouth General Hospital	Gen	City	100	84	22	755	4,015
Ravenna, 9,783—Portage							
Robinson Memorial Portage County Hospital▲	Gen	County	110	83	30	1,108	5,053
St. Clairsville, 3,036—Belmont							
Belmont Sanatorium	TB	County	56	41	.	..	42
[illegible]▲	Gen	NPAssn	34	35	10	425	1,344
[illegible]▲	Gen	NPAssn	105	70	28	798	3,402
[illegible]▲	Gen	NPAssn	53	46	12	496	2,313
[illegible]▲	Gen	Church	66	55	19	401	3,424
[illegible]	Gen	NPAssn	54	36	16	390	1,859
[illegible]▲	Gen	NPAssn	58	34	12	659	2,228
	▲ Unit of University Hospitals, Cleveland						
Springfield, 78,029—Clark							
Clark County Tuberculosis Sanatorium▲	TB	County	125	83	.	...	119
Mercy Hospital	Gen	Church	219	...	38	Estab. 1950	
Springfield City Hospital★+▲◇	Gen	City	240	170	50	1,886	8,177
[illegible]	Gen	Church	68	58	24	881	5,530
[illegible]▲	Gen	NPAssn	213	183	40	1,660	8,910
Tiffin, 18,943—Seneca							
Mercy Hospital	Gen	Church	89	74	20	1,123	3,749
Tiffin State Hospital	Ment	State	636	630	..	...	57
Toledo, 301,358—Lucas							
Contagious Disease Hospital	Unit of Maumee Valley Hospital						
Flower Hospital★▲◇	Gen	Church	168	164	37	1,158	7,931
Maumee Valley Hospital★+▲◇	Gen	County	292	162	33	544	4,263
Mercy Hospital★+▲◇	Gen	Church	289	278	60	2,780	12,048
Riverside Hospital★▲◇	Gen	NPAssn	155	134	44	1,193	5,686
Robinwood Hospital▲◇	Gen	Church	88	67	15	478	2,616
St. Vincent's Hospital★+▲◇	Gen	Church	310	290	60	1,700	11,132
Toledo Hospital★+▲◇	Gen	NPAssn	266	241	54	2,699	10,437
Toledo State Hospital▲⊙	Ment	State	2,989	2,877	..		1,070
William W. Roche Memorial Hospital	TB	County	185	183	..	..	229
Troy, 10,628—Miami							
[illegible]▲	Gen	NPAssn	100	71	20	711	3,328
[illegible]	Gen	NPAssn	55	41	12	499	2,214
[illegible]	Gen	City	37	31	16	551	1,396
[illegible]							
St. Joseph's Riverside Hospital▲	Gen	Church	113	99	27	1,011	4,983
Trumbull County [illegible]	—	County	48	37	.	...	75
[illegible]▲		NPAssn	104	165	40	1,839	7,981
[illegible]	Gen	County	35	...	18	Estab. 1950	
[illegible]▲	Gen	NPAssn	51	34	11	636	2,415
[illegible]	Gen	City	36	41	10	286	1,475
[illegible]	Gen	Indiv	15	7	7	152	472
[illegible]	Gen	City	75	..	20	Estab. 1950	
[illegible]▲	N&M	Corp	86	80	..	...	571
Xenia, 12,8[illegible]—Greene							
McClellan H[illegible]▲	Gen	Corp	23	15	4	131	536
Y[illegible]							
[illegible]▲	TB	County	176	164	..	...	174
St. Elizabeth Hospital★+▲◇	Gen	Church	330	289	60	2,575	13,240
Youngstown Hospital★+▲◇	Gen	NPAssn	627	588	98	3,446	20,937
Youngstown Receiving Hospital⊙	Ment	State	84	80	..	...	892
Z[illegible]							
[illegible]▲	Gen	NPAssn	145	112	25	1,136	4,908
[illegible]▲	Gen	Church	150	124	36	1,293	5,153

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Akron, 273,189—Summit							
Goodyear Hospital	Indus	NPAssn	18	3	..	...	139
Bluffton, 2,415—Allen							
Bluffton Community Hospital	Gen	NPAssn	24	14	10	351	739
Cincinnati, 500,510—Hamilton							
Catherine Booth Home and Hospital	Mat	Church	13	1	13	260	356
[illegible] Asylum▲	Conv	NPAssn	100	41	..	...	119
Children's Home (Hanna Hospital)	Inst	NPAssn	16	3	..	...	500
Madeline Marie Nursing Home	Conv	Indiv	46	37	..	...	66
St. George Hospital for Convalescent Care	Conv	Church	40	25	..	...	606
[illegible] Hospital	Mat	Church	10	5	10	137	139
[illegible]	Conv	NPAssn	60	61	..	...	119
[illegible]	Mat	NPAssn	39	5	15	73	85
Ingleside Hospital	N&M	NPAssn	140	110	..	...	570
Mary B. Talbert Hospital	Mat	Church	14	10	14	467	595
Columbus, 374,770—Franklin							
Columbus State School	MeDe	State	2,215	2,167	..	...	381
Neil Training School	MeDe	Indiv	12	12	..	...	20
[illegible]	Conv	Indiv	35	30	..	...	40
[illegible]▲	Orth	NPAssn	50	23	..	...	119
[illegible] Hospital	Inst	State	32	12	..	...	489
Euclid, 41,447—Cuyahoga							
Glencliff Hospital	Chr	Corp	65	51	..	...	33
Rose-Mary, The Johanna Grasselli Home for Crippled Children	Orth	Church	50	40	..	...	62
[illegible]	Mat	NPAssn	35	10	18	524	558
Granville, 2,647—Licking							
Whisler Memorial Hospital	Inst	NPAssn	40	2	..	...	587
Greenfield, 4,853—Highland							
Greenfield Municipal Hospital	Gen	City	23	14	9	304	628
Hamilton, 57,717—Butler							
Butler County Tuberculosis Sanatorium	TB	Church	21	20	..	...	37
Jamestown, 1,347—Greene							
Haines Maternity Hospital	Mat	Indiv	6	1	7	133	133
Lancaster, 24,140—Fairfield							
Boys' Industrial School Hospital	Inst	State	125	10	..	. .	422
North Canton, 4,027—Stark							
Shadyside Hospital	Gen	NPAssn	22	18	2	26	1,200
Orient, 175—Pickaway							
Orient State School	MeDe	State	2,974	2,914	..	...	184
Reynoldsburg, 652—Franklin							
Nightingale Cottage C[illegible]	Chil	NPAssn	30	24	..	...	49
[illegible] Home Hospital	Inst	State	210	91	..	...	449
Toledo, 301,358—Lucas							
Ashland Avenue Hospital for C[illegible]	Conv	Indiv	15	10	..	...	43
[illegible] Home▲	Orth	NPAssn	80	38	..	...	279
W[illegible] P.O. [illegible],175—Cuyahoga							
[illegible] Hospital	Chr	City	625	515	..	...	110
Wickliffe, 5,00[illegible]—Lake							
[illegible]	N&M	Indiv	50	45	..	...	180
[illegible]	N&M	NPAssn	12	10	..	...	46
[illegible]	Inst	NPAssn	25	3	..	...	375
Orphans' Home Hospital	Inst	State	80	11	..	...	800

OKLAHOMA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ada, 15,935—Pontotoc							
Cowling Hospital and Clinic	Gen	NPAssn	53	19	12	68	848
Valley View Hospital▲	Gen	NPAssn	80	57	18	628	3,844
Alva, 6,495—Woods							
Alva General Hospital	Gen	City	41	25	9	224	1,641
Anadarko, 6,164—Caddo							
Anadarko Hospital	Gen	Part	26	18	6	255	1,170
Ardmore, 17,831—Carter							
Ardmore Sanitarium and Hospital	Gen	NPAssn	55	18	12	165	2,000
Hardy Sanitarium▲	Gen	Indiv	64	24	18	343	1,360
Atoka, 2,650—Atoka							
Fine Clinic and Hospital	Gen	Indiv	14	7	6	89	585
[illegible] Hospital	Gen	County	72	60	19	810	3,361
Blackwell, 9,218—Kay							
Blackwell General Hospital	Gen	Church	53	35	10	280	1,806
Boise City, 1,897—Cimarron							
Cimarron County Hospital	Gen	County	20	...	5	Estab. 1950	
Bristow, 5,404—Creek							
Sisler Hospital	Gen	Indiv	17	7	5	99	609
Carnegie, 1,714—Caddo							
Carnegie Hospital	Gen	Corp	14	5	5	104	344
C[illegible]							
[illegible]	Gen	NPAssn	32	21	8	153	1,032
C[illegible]							
Chickasha Hospital and Clinic	Gen	Part	54	30	12	268	2,003
[illegible] General Hospital	Gen	NPAssn	20	7	6	143	575
Claremore, 5,530—Rogers							
[illegible]tal▲	Gen	IA	80	63	18	199	1,572
[illegible]▲	Gen	IA	31	16	11	107	741
[illegible]▲	Gen	State	125	62	18	355	2,703

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Western Oklahoma Tuberculosis Sanatorium▲	TB	State	260	238	..	...	368
Cushing, 8,396—Payne							
Cushing Municipal Hospital	Gen	NPAssn	60	35	12	348	2,191
Duncan, 15,260—Stephens							
Lindley Hospital	Gen	Indiv	25	18	4	265	1,558
Patterson Hospital	Gen	Indiv	30	21	9	304	1,452
Durant, 10,521—Bryan							
Durant Hospital	Gen	Part	28	16	9	290	1,026
Evergreen Sanit	Gen	Indiv	17	5	4	49	278
[illegible]	Gen	Indiv	10	5	4	68	1,854
El [illegible]							
[illegible]	Gen	NPAssn	75	33	9	264	2,623
[illegible]	Gen	Part	26	12	8	158	999
El [illegible]							
[illegible] Hospital	Gen	Indiv	12	5	2	21	183
El Reno Sanit	Gen	Part	40	...	10	...	...
[illegible]							
[illegible]▲	Gen	NPAssn	110	98	20	315	2,956
St. Mary's Hospital and Annex▲	Gen	Church	150	129	25	1,274	7,468
Fort Sill,—Comanche							
U. S. Army Hospital▲	Gen	Army	160	101	20	596	5,296
Fort Supply, 414—Woodward							
Western State Hospital	Ment	State	1,570	1,313	.	...	388
[illegible]							
[illegible]	Gen	Part	18	7	10	158	805
[illegible]	Gen	Indiv	13	7	2	40	73
Guthrie, 10,019—Logan							
Katherine E. Price Benedictine Heights Hosp.▲	Gen	Church	90	35	17	329	1,599
Guymon, 4,704—Texas							
[illegible]	Gen	City	25	18	8	167	874
[illegible]	Gen	Indiv	25	18	4	163	939
[illegible] Hospital	Gen	Indiv	15	8	3	150	527
Hobart, [illegible]—Kiowa							
[illegible]	Gen	Part	42	13	12	304	2,262
[illegible]							
St. Francis Hospital	Gen	Church	30	24	12	230	1,437
Hollis, 3,088—Harmon							
[illegible]	Gen	Indiv	18	9	4	100	858
[illegible] Hospital	Gen	NPAssn	21	...	7	Estab. 1950	
Lawton, [illegible]—Comanche							
[illegible]	Gen	Part	18	11	12	344	970
[illegible]▲	Gen	IA	110	67	12	256	2,369
[illegible]	Gen	Corp	63	40	20	400	2,618
Mangum, 4,257—Greer							
[illegible]	Gen	Church	59	21	12	193	1,848
[illegible]	Gen	NPAssn	48	30	7	275	2,322
[illegible]▲	Gen	Church	65	36	15	400	2,115
Miami, 11,703—Ottawa							
Miami Baptist Hospital	Gen	Church	75	31	18	468	2,223
[illegible]	Gen	NPAssn	36	18	6	151	1,471
[illegible]▲	Gen	City	92	54	26	708	3,938
[illegible]▲	Gen	Church	88	59	12	316	2,416
[illegible]▲	Gen	Vet	386	317	..	...	4,278
[illegible]▲	Ment	State	3,000	2,935	..	...	1,146
Ellison Infirmary▲	Inst	State	50	16	..	...	1,495
Norman Municipal Hospital▲	Gen	City	58	38	22	696	2,472
Nowata, [illegible]—Nowata							
[illegible]		NPAssn	32	13	6	143	1,022
[illegible]		Church	20	15	8	159	788
Okeene, 1,188—Blaine							
Okee[illegible]		City	10	4	5	68	495
Oklaho[illegible]							
[illegible]▲		Corp	80	68	..	...	2,000
[illegible]	Gen	Indiv	32	19	10	99	891
[illegible]▲	Gen	Church	150	145	25	1,030	6,702
[illegible]	Ven	State	60	37	4	...	1,718
[illegible]	Gen	Indiv	85	42	16	341	2,245
[illegible]	N&M	NPAssn	80	47	..	...	983
St. [illegible]▲	Gen	Church	375	343	75	3,198	13,419
University Hospitals★+▲◇	GenOr	State	450	383	35	1,418	7,778
U. S. Air Force Hospital	Gen	USAF	75	23	16	161	1,566
Veterans Admin. Hospital★+▲	Gen	Vet	220	204	..	...	3,427
[illegible]▲	Gen	Part	188	165	34	1,618	8,985
[illegible]	Gen	Part	13	11	..	9	719
Okmulgee City Hospital	Gen	City	50	25	10	288	1,390
Pauls Valley, 6,867—Garvin							
Lindsey-Johnson Hospital	Gen	Part	28	22	7	278	2,157
Pauls Valley State Hospital	Epil	State	402	382	.	...	.104
Pawhuska, 5,307—Osage							
Oklahoma Home Infirmary	Gen	County	46	7	3	67	331
Pawhuska Municipal Hospital	Gen	City	33	21	8	132	1,323
Pawnee, 2,778—Pawnee							
Pawnee Municipal Hospital	Gen	City	25	18	6	120	1,307
Pawnee-Ponca Indian Hosp.▲	Gen	IA	22	23	6	133	989
Ponca City, 20,185—Kay							
Ponca City Hospital▲◇	Gen	Church	110	70	25	732	3,310
Poteau, 4,778—LeFlore							
LeFlore County Memorial Hospital	Gen	County	54	...	16	Estab. 1950	
Pryor, 2,501—Mayes							
Whitaker Hospital	Gen	Part	18	8	5	164	878

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Sapulpa, 13,018—Creek							
Sapulpa City Hospital	Gen	City	20	13	6	287	1,36
Sayre, 3,356—Beckham							
[illegible]	Gen	City	22	9	6	210	1,0
[illegible]	Gen	City	21	10	6	297	1,0
[illegible]	Gen	Part	20	9	6	84	5
[illegible]—Ellis							
[illegible]	Gen	NPAssn	50	22	8	165	2,1
Sh[illegible]							
[illegible] Hospital▲	Gen	Part	27	18	6	241	1,4
Baxter Hospital	Gen	Part	36	18	8	227	1,16
[illegible]▲	TB	IA	90	81	..	...	11
[illegible]	Gen	City	75	25	25	349	1,6
[illegible]	Inst	State	50	12	..	...	1,9
[illegible]▲	Gen	City	82	50	24	684	3,7
Sulphur, 4,373—Murray							
Oklahoma State Veterans Hospital	GenTb	State	175	172	..	...	1,01
Taft, 772—Muskogee							
Taft State Hospital	Ment	State	800	814	..	...	2
Tahlequah, 4,729—Cherokee							
Tahlequah City Hospital	Gen	City	36	18	11	260	1,53
Wm. W. Hastings Hospital▲	Gen	IA	35	36	13	300	1,48
Talihina, 1,057—LeFlore							
Eastern Okla[illegible]	TB	State	298	251	..	...	43
[illegible]▲	GenTb	IA	237	140	20	281	1,40
Tulsa, [illegible]—Tulsa							
[illegible]	Gen	Part	37	23	9	253	1,56
[illegible]▲	Gen	NPAssn	284	261	40	1,504	11,24
St. John's Hospital★+▲◇	Gen	Church	430	366	86	2,958	17,03
Vinita, 5,501—Craig							
Eastern State Hospital	Ment	State	2,484	2,453	..	...	52
Vinita Hospital	Gen	Corp	18	9	6	194	86
Waurika, 2,336—Jefferson							
Waurika Hospital	Gen	Indiv	20	11	4	101	77
Waynoka, 2,015—Woods							
E. P. Clapper Memorial Hospital	Gen	City	17	8	5	74	49
Woodward, 5,896—Woodward							
Memorial Hospital	Gen	NPAssn	31	17	6	280	1,61

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Chickasha, 15,753—Grady							
Women's and Children's Hospital and Clinic	Gen	Indiv	13	3	5	29	36
Enid, 35,976—Garfield							
Enid State Sc[illegible]	McDe	State	1,366	1,275	..	...	13
[illegible] Hospital	Gen	Indiv	23	6	5	...	40
Ok[illegible]							
[illegible]		Church	26	10	25	201	372
[illegible]		Indiv	35	30	..	...	138
Tahlequah, 4,729—Cherokee							
Sequoyah Vocational School Hospital	Inst	IA	19	3	..	...	289
Tuls[illegible]							
Ju[illegible]	Orth	NPAssn	38	37	..	...	166
Salvation Army Home and Hospital	Mat	Church	26	11	12	43	65
Wynnewood, 2,417—Garvin							
Wynnewood Hospital Clinic	Gen	Part	12	11	6	271	1,252

OREGON

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Albany, 10,076—Linn							
Albany General Hospital	Gen	NPAssn	53	29	16	469	1,986
Ashland, 7,702—Jackson							
Ashland General Hospital	Gen	Part	27	12	9	232	675
Astoria, 12,220—Clatsop							
Columbia Hospital▲	Gen	Church	75	43	15	257	2,116
St. Mary's Hospital▲	Gen	Church	85	40	10	230	1,697
Baker, 9,425—Baker							
St. [illegible]▲	Gen	Church	99	48	22	332	2,099
Be[illegible]							
St. [illegible]	Gen	Church	60	40	15	567	2,743
Burns, [illegible]—Harney							
Harney County Hospital	Gen	County	32	...	8	Estab. 1950	
Coos Bay, 5,956—Coos							
McAuley Hospital	Gen	Church	50	38	10	374	2,179
Corvallis, 16,173—Benton							
[illegible] Hospital▲	Gen	Church	60	41	26	659	2,534
[illegible]	Inst	State	30	8	..	...	655
Dallas, 4,744—Polk							
Dallas Hospital	Gen	Corp	30	15	10	212	724
Eugene, 35,672—Lane							
Eugene Hospital and Clinic▲	Gen	Part	34	30	..	...	2,100
Sacred Heart General Hospital★▲◇	Gen	Church	180	169	58	2,756	10,555
[illegible]	Gen	County	62	41	14	530	2,465
[illegible]	Gen	Part	80	45	19	615	2,940

OREGON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hood River, 3,696—Hood River							
[illegible]	Gen	NPAssn	44	34	12	396	2,148
[illegible]▲	Gen	Corp	54	22	..	...	1,651
[illegible]	Gen	Corp	93	54	30	1,088	4,314
[illegible]	Gen	NPAssn	65	27	12	205	1,153
[illegible]▲	Gen	Church	60	40	13	247	1,997
[illegible]	Gen	Church	30	21	7	592	1,870
[illegible]	Gen	Corp	50	23	13	372	1,388
[illegible]	Gen	Corp	46	43	12	398	2,123
Medford, 17,170—Jackson							
Community Hospital▲	Gen	NPAssn	59	34	16	510	2,421
[illegible]▲	Gen	Church	75	41	12	397	2,730
[illegible] Diseases of the Chest	TB	NPAssn	65	47	..	...	156
Myrtle Point, 2,028—Coos							
[illegible]	Gen	Indiv	41	23	8	353	1,157
[illegible]	Gen	NPAssn	22	10	8	142	640
North Bend, 5,960—Coos							
Keizer Brothers Hospital	Gen	Corp	45	40	10	427	2,175
Nyssa, 2,510—Malheur							
Malheur Memorial Hospital	Gen	NPAssn	40	..	13	Estab. 1950	
Ontario, 4,412—Malheur							
Holy Rosary Hospital▲	Gen	Church	72	36	20	780	2,922
Oregon City, 7,616—Clackamas							
[illegible]	Gen	Part	34	20	8	235	905
[illegible]	Gen	Corp	64	49	16	603	2,882
[illegible]▲	Ment	State	1,450	1,371	..	...	480
[illegible]▲	Gen	Church	115	93	20	777	5,044
Doernbecher Memorial Hospital for Children▲⊙	Unit of University of Oregon Medical School Hospitals and Clinics						
Emanuel Hospital★+▲◇	Gen	Church	350	320	106	4,246	13,697
Good Samaritan Hosp.★+▲◇	Gen	Church	410	322	75	2,264	12,737
Holladay Park Hospital▲	Gen	NPAssn	75	59	14	319	2,214
Juvenile Hospital for Girls	Ven	NPAssn	50	46	1	...	75
Morningside Hospital	N&M	Corp	365	344	.	...	77
Multnomah Hospital▲	Unit of University of Oregon Medical [illegible]						
Permanente Hospital							
Physicians and Surgeons Hospital▲	Gen	NPAssn	123	97	..	...	4,941
Portland Sanitarium and Hospital★▲	Gen	Church	148	124	30	1,920	7,277
Providence Hospital★+▲◇	Gen	Church	280	215	..	..	9,095
St. Vincent's Hospital★+▲◇	Gen	Church	367	292	47	2,139	11,203
Salvation Army White Shield Home	Mat	Church	14	9	12	188	189
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	60	..	...	378
Theo. B. Wilcox Memorial Hospital	Unit of Good Samaritan Hospital						
[illegible] Clinics★+▲◇	GenTb	CoState	418	379	30	953	7,357
University State Tuberculosis Hospital▲⊙	Unit of University of Oregon Medical School Hospitals and Clinics						
Veterans Admin. Hospital+▲	Gen	Vet	510	455	..	...	6,520
Prairie City, 647—Grant							
Blue Mountain General Hosp.	Gen	City	30	12	6	139	876
Roseburg, 8,205—Douglas							
Mercy Hospital	Gen	Church	48	37	14	874	2,797
Veterans Admin. Hospital▲	Ment	Vet	670	605	..	...	388
St. Helens, 4,703—Columbia							
St. Helens General Hospital	Gen	Corp	10	3	8	140	378
Salem, 43,064—Marion							
Oregon State Hospital▲⊙	Ment	State	3,000	2,860	..	...	1,209
Oregon State Tuberculosis Hospital▲	TB	State	214	202	..	...	173
Salem General Hospital▲	Gen	NPAssn	80	73	18	1,267	4,758
Salem Memorial Hospital▲	Gen	NPAssn	91	76	24	904	4,327
Seaside, 3,843—Clatsop							
Seaside Hospital	Gen	City	26	12	10	129	853
Silverton, 3,117—Marion							
[illegible]	Gen	NPAssn	37	25	12	360	1,575
S[illegible]							
[illegible]	Gen	Corp	35	15	12	181	1,137
The Dalles, 7,645—Wasco							
Eastern Oregon State [illegible]	TB	State	160	137	..	...	143
[illegible]	Gen	Indiv	22	12	6	85	763
[illegible]▲	Gen	NPAssn	73	49	12	386	2,396
Ti[illegible]—Tillamook							
Tillamook County General Hospital▲	Gen	County	75	41	20	501	2,614
Toledo, 2,308—Lincoln							
Lincoln Hospital	Gen	Corp	25	20	5	334	1,259
Troutdale, 211—Multnomah							
[illegible]	TB	County	41	27	..	...	91
W[illegible]—Jefferson							
[illegible]	Gen	IA	23	9	5	52	338
W[illegible]							
[illegible]	Surg	NPAssn	7	2	..	...	120

OREGON—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Enterprise, 1,702—Wallowa							
Wallowa Memorial Hospital	Gen	County	30	11	6	146	763
Portland, 371,011—Multnomah							
City Isolation Hospital	IsoVen	City	115	14	4	...	604
Raleigh Hills Sanitarium	Alcoh	Corp	18	11	..	...	178
Retreat Hospital	Drug	Indiv	5	2	..	...	109
Woodburn, 2,396—Marion							
Woodburn Hospital	Gen	Indiv	8	4	6	117	297

PENNSYLVANIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
[illegible]							
[illegible]▲◇	Gen	NPAssn	304	208	55	1,582	8,168
[illegible]▲	Gen	NPAssn	434	382	35	1,983	14,746
[illegible]▲	Ment.	State	2,017	2,067	..	...	545
Sacred Heart Hospital★+▲◇	GenTb	Church	390	299	54	1,470	8,325
Allenwood, 400—Union							
Devitt's Camp	TB	NPAssn	104	101	..	...	209
Altoona, 76,844—Blair							
Altoona Hospital★▲	Gen	NPAssn	220	171	37	1,172	6,826
Mercy Hospital★▲◇	Gen	NPAssn	176	152	46	1,560	5,965
[illegible]	Gen	Vet	200	...	..	Estab. 1950	
[illegible]	N&M	NPAssn	104	89	..	...	380
[illegible]▲◇	Gen	State	173	137	20	678	4,033
[illegible]▲	Gen	Vet	943	871	..	...	8,172
Providence Hospital▲◇	Gen	NPAssn	98	84	36	813	3,958
[illegible]	Gen	Indiv	17	12	5	168	688
[illegible]▲	Gen	NPAssn	63	50	22	919	2,694
[illegible] 11,573—Allegheny							
[illegible]▲	Gen	NPAssn	127	107	24	723	4,228
[illegible]							
Berwick Hospital	Gen	NPAssn	63	39	12	494	2,138
Bethlehem, 66,027—Northampton							
Doctors Hospital	Gen	Part	30	10	10	64	591
St. Luke's Hospital★+▲◇	Gen	NPAssn	353	292	47	1,909	10,661
Bloomsburg, 10,621—Columbia							
Bloomsburg Hospital▲	Gen	NPAssn	96	74	16	555	2,869
[illegible]▲	Gen	State	90	79	9	259	3,165
[illegible]▲	Gen	NPAssn	133	121	42	1,396	6,093
Bradford, 17,281—McKean							
Bradford Hospital+▲◇	Gen	NPAssn	121	101	30	653	4,267
Brookville, 4,247—Jefferson							
Brookville Hospital	Gen	NPAssn	36	37	10	472	1,994
Brownsville, 7,644—Fayette							
Brownsville General Hospital▲	Gen	NPAssn	82	81	17	759	3,111
Bryn Mawr, 10,206—Montgomery							
Bryn Mawr Hospital★+▲◇	Gen	NPAssn	285	230	48	1,610	8,096
Butler, 23,511—Butler							
Butler County Memorial Hospital▲◇	Gen	NPAssn	166	176	36	1,528	5,912
[illegible]▲◇	Gen	Vet	880	812	..	...	4,390
Ca[illegible]							
[illegible]▲	Gen	NPAssn	84	61	32	762	3,122
C[illegible]							
[illegible]▲	Gen	NPAssn	69	41	18	207	1,632
[illegible]▲◇	Gen	Church	113	68	20	379	635
[illegible]—Cumberland							
Carlisle Hospital▲	Gen	NPAssn	120	104	30	837	3,958
U. S. Army Hospital▲	Gen	Army	75	32	6	266	1,793
Chambersburg, 17,205—Franklin							
Chambersburg Hospital▲	Gen	NPAssn	139	84	36	877	4,455
Charleroi, 9,854—Washington							
Charleroi-Monessen Hospital▲	Gen	NPAssn	162	123	43	1,251	5,830
Chester, 65,824—Delaware							
Chester Hospital★▲◇	Gen	NPAssn	248	174	71	1,664	7,688
J. Lewis Crozer Homeopathic Hospital▲	Gen	NPAssn	100	101	35	825	5,337
[illegible]▲	Ment	State	1,399	1,399	..	...	269
[illegible]▲	Gen	NPAssn	107	77	22	575	3,809
[illegible]▲	Gen	State	157	80	20	586	2,969
[illegible] Hospital	Gen	NPAssn	17	9	3	63	357
Coatesville Hospital▲◇	Gen	NPAssn	102	75	31	779	3,921
Veterans Admin. Hospital+▲⊙	Ment	Vet	1,953	1,913	..	...	283
Columbia, 11,962—Lancaster							
Columbia Hospital	Gen	NPAssn	66	38	14	443	1,484
Confluence, 1,039—Somerset							
Price Hospital	Gen	Indiv	14	8	8	110	399
Co[illegible]							
[illegible]▲	Gen	State	114	88	33	957	3,270
Corry, 7,[illegible]—Erie							
[illegible]	Gen	NPAssn	40	30	8	397	2,015
Co[illegible]							
P[illegible] Hospital	Gen	NPAssn	47	31	10	209	1,549
Cresson, 2,563—Cambria							
State Tuberculosis Hospital No. 2▲	TB	State	757	584	..	...	443
Danville, 7,057—Montour							
Danville State Hospital+▲○	Ment	State	2,551	2,450	..	...	554

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Geo. F. Geisinger Memorial Hospital and Foss Clinic*+▲◇	Gen	NPAssn	205	175	36	1,041	8,824
Darby, 13,188—Delaware							
Fitzgerald-Mercy Hosp.*+▲◇	Gen	Church	200	165	64	2,613	7,225
Dixmont, 188—Allegheny							
Dixmont State Hospital	Ment	State	992	968	..	..	36
Drexel Hill,—Delaware							
Delaware County Hospital▲	Gen	NPAssn	74	53	16	609	2,602
Du Bois, 11,466—Clearfield							
Du Bois Hospital	Gen	Church	75	51	18	450	2,598
Maple Avenue Hospital	Gen	NPAssn	79	57	15	418	3,094
[illegible]	TB	NPAssn	191	188	..	...	178
Easton, 34,410—Northampton							
Betts Hospital	Gen	NPAssn	40	35	20	539	1,487
Easton Hospital*+▲◇	Gen	NPAssn	197	150	31	1,244	6,381
East Stroudsburg, 7,272—Monroe							
General Hospital of Monroe County▲	Gen	NPAssn	65	58	18	639	2,609
Elizabethtown, 5,095—Lancaster							
Philadelphia Freemasons' Memorial Hospital Masonic Homes	Inst	NPAssn	165	167	..	...	577
State Hospital for Crippled Children+▲	Orth	State	225	130	..	...	176
Ellwood City, 12,898—Lawrence							
Ellwood City Hospital▲	Gen	NPAssn	83	53	16	741	2,513
Elwyn, 200—Delaware							
Elwyn Training School	MeDe	NPAssn	1,155	1,070	..	...	74
Ephrata, 7,050—Lancaster							
Ephrata Community Hospital	Gen	NPAssn	66	24	22	383	1,384
Erie, 130,125—Erie							
Erie County Tuberculosis Hospital	TB	County	65	60	.	...	116
Hamot Hospital*+▲◇	Gen	NPAssn	289	250	43	1,575	11,489
St. Vincent's Hospital*+▲◇	Gen	NPAssn	299	230	71	2,819	11,000
Zem Zem Hospital for Crippled Children	Orth	NPAssn	46	36	..	...	68
Everett, 2,288—Bedford							
Everett Hospital▲	Gen	NPAssn	35	17	8	136	760
Franklin, 9,992—Venango							
Franklin Hospital	Gen	NPAssn	81	57	18	550	2,766
Gettysburg, 7,043—Adams							
Annie M. Warner Hospital▲	Gen	NPAssn	74	60	20	803	2,673
Gladwyne, 1,236—Montgomery							
Gladwyne Colony	N&M	Indiv	90	90	.		117
Greensburg, 17,237—Westmoreland							
Westmoreland Hospital*+▲◇	Gen	NPAssn	190	161	40	1,786	7,286
Greenville, 9,177—Mercer							
Greenville Hospital▲	Gen	NPAssn	64	52	22	417	2,732
Grove City, 7,408—Mercer							
Grove City Hospital	Gen	NPAssn	31	27	15	493	2,108
Hamburg, 3,797—Berks							
Pennsylvania State Sanatorium for Tuberculosis No. 3+▲	TB	State	636	462	.	...	343
Hanover, 14,065—York							
Hanover General Hospital▲	Gen	NPAssn	80	85	18	957	2,948
[illegible]							
[illegible]	Gen	NPAssn	312	306	56	2,015	10,907
[illegible]	Gen	NPAssn	260	228	50	1,650	8,466
[illegible]	Ment	State	2,445	2,450	..	...	453
[illegible]	Gen	Indiv	32	..	12	...	...
[illegible]	Gen	State	180	164	30	789	5,690
St. Joseph Hospital	Gen	Church	190	82	50	715	3,475
Hollidaysburg, 6,456—Blair							
[illegible]	Ment	State	389	380		...	106
H							
[illegible]	Gen	NPAssn	124	99	26	742	4,075
Honesdale, 5,650—Wayne							
Wayne County Memorial Hospital	Gen	NPAssn	35	23	9	214	1,048
Huntingdon, 7,344—Huntingdon							
J. C. Blair Memorial Hosp.▲	Gen	NPAssn	70	85	14	644	3,569
Indiana, 11,706—Indiana							
Indiana Hospital▲◇	Gen	NPAssn	166	119	34	1,155	5,061
Jersey Shore, 5,571—Lycoming							
Jersey Shore Hospital	Gen	NPAssn	32	28	10	262	1,201
Johnstown, 62,723—Cambria							
Conemaugh Valley Memorial Hospital*▲◇	Gen	NPAssn	346	321	69	1,702	10,695
Lee Hospital▲	Gen	NPAssn	100	74	20	533	3,125
Mercy Hospital▲◇	Gen	Church	116	100	28	1,249	4,271
Kane, 5,644—McKean							
Community Hospital▲	Gen	NPAssn	63	37	14	225	1,844
Kane Summit Hospital	Gen	NPAssn	23	16	6	148	768
Kingston, 21,061—Luzerne							
Nesbitt Memorial Hospital*▲◇	Gen	NPAssn	200	148	40	1,225	6,464
Kittanning, 7,705—Armstrong							
Armstrong County Hospital▲	Gen	NPAssn	69	66	22	891	2,796
Lancaster, 63,601—Lancaster							
Lancaster General Hosp.*+▲◇	Gen	NPAssn	293	261	79	2,613	9,532
Rossmere Sanatorium	TB	CyCo	56	50	.	..	70
St. Joseph's Hospital*+▲◇	Gen	Church	232	184	41	933	6,647
Lansdale, 9,767—Montgomery							
Elm Terrace Hospital	Gen	NPAssn	38	22	14	282	1,460
Latrobe, 11,952—Westmoreland							
Latrobe Hospital▲◇	Gen	NPAssn	173	119	45	1,135	5,053
Laurelton, 327—Union							
Laurelton State Village	MeDe	State	988	918	..	...	85
Lebanon, 28,134—Lebanon							
Good Samaritan Hospital▲	Gen	NPAssn	117	84	30	862	3,855
Lebanon Sanatorium	Gen	NPAssn	40	40	16	...	1,585
Veterans Admin. Hospital▲	Ment	Vet	501	451	..	...	1,637
Leetsdale, 2,413—Allegheny							
D. T. Watson Home for Crippled Children▲	Orth	NPAssn	100	98	..	...	131
Lewisburg, 5,232—Union							
Evangelical Community Hospital	Gen	Church	47	40	22	679	2,505
U. S. Penitentiary Hospital▲	Inst	USPHS	67	29	..	...	627
Lewistown, 13,875—Mifflin							
Lewistown Hospital▲◇	Gen	NPAssn	114	110	21	763	4,005
Limeport, 250—Lehigh							
Sacred Heart Sanatorium	Unit of Sacred Heart Hospital, Allentown						
Lock Haven, 11,325—Clinton							
Lock Haven Hospital▲◇	Gen	NPAssn	91	70	14	613	3,817
Mayview, 420—Allegheny							
Mayview State Hospital⊙	Ment	State	3,186	3,121	..	...	883
Allegheny County Institution District Hospital	Unit of Allegheny County Institution District Hospital, Woodville						
McKeesport, 51,223—Allegheny							
McKeesport Hospital*▲◇	Gen	NPAssn	275	245	50	2,994	8,995
McKees Rocks, 16,278—Allegheny							
Ohio Valley General Hosp.▲◇	Gen	NPAssn	111	72	35	737	3,778
Meadville, 18,906—Crawford							
Meadville City Hospital▲◇	Gen	NPAssn	122	117	28	793	4,872
Spencer Hospital▲◇	Gen	NPAssn	116	85	22	458	3,743
Mechanicsburg, 6,772—Cumberland							
Seidle Memorial Hospital	Gen	NPAssn	38	20	22	652	717
Mercer, 2,396—Mercer							
Mercer Cottage Hospital	Gen	Corp	55	26	5	104	1,422
Mercer Sanitarium	N&M	Part	42	34	..	...	206
Meshoppen, 580—Wyoming							
Tyler Memorial Hospital	Gen	NPAssn	20	18	10	311	1,177
Meyersdale, 3,124—Somerset							
Hazel McGilvery Hospital	Gen	NPAssn	16	11	8	223	838
Monaca, 7,410—Beaver							
Beaver County Sanatorium▲	Chr	County	100	98	..	...	106
Monessen, 17,929—Westmoreland							
Gemmill Hospital	ENT	Part	17	8	..	...	759
Monongahela, 8,921—Washington							
Memorial Hospital▲	Gen	NPAssn	74	72	25	896	3,136
Mount Pleasant, 5,911—Westmoreland							
Henry Clay Frick Memorial Hospital▲	Gen	NPAssn	72	50	26	880	3,108
Muncy, 2,761—Lycoming							
Muncy Valley Hospital	Gen	NPAssn	20	19	12	246	748
Nanticoke, 20,140—Luzerne							
Nanticoke State Hospital▲	Gen	State	100	100	18	664	3,544
New Brighton, 9,503—Beaver							
Beaver Valley General Hospital▲◇	Gen	NPAssn	80	67	18	494	3,210
New Castle, 48,563—Lawrence							
Jameson Memorial Hosp.▲◇	Gen	NPAssn	170	133	36	1,487	6,829
New Castle Hospital▲◇	Gen	Church	111	94	22	635	4,279
New Cumberland, 6,200—Cumberland							
U. S. Army Hospital	Gen	Army	25	21	..	...	896
New Kensington, 25,226—Westmoreland							
Citizens General Hospital▲◇	Gen	NPAssn	147	133	38	1,397	6,981
New Wilmington, 1,943—Lawrence							
Overlook Sanitarium	N&M	Part	35	23	..	...	189
Norristown, 38,193—Montgomery							
Montgomery Hospital*▲◇	Gen	NPAssn	187	149	38	1,096	6,490
Norristown State Hospital+▲⊙	Ment	State	4,580	4,446	..	...	871
Sacred Heart Hospital*▲	Gen	Church	105	75	30	575	3,421
Oakbourne (West Chester P. O.), 100—Chester							
Oakbourne Colony Hospital	Epil	NPAssn	125	98	..	...	40
Oil City, 19,556—Venango							
Oil City Hospital▲◇	Gen	NPAssn	155	110	20	929	5,428
Palmerton, 6,632—Carbon							
Palmerton Hospital▲	Gen	NPAssn	65	48	11	376	2,205
Peckville, 8,106—Lackawanna							
Mid-Valley Hospital	Gen	NPAssn	65	38	14	338	1,570
Philadelphia, 2,064,794—Philadelphia							
All Saints Hospital for Treatment of Tuberculosis	TB	Church	76	61	..	...	144
American Hospital for Diseases of the Stomach	Gen	NPAssn	35	23	5	69	656
American Oncologic Hosp.+▲	SkCa	NPAssn	55	35	..	..	840
[illegible]	Gen	NPAssn	99	28	24	206	2,399
[illegible]	Gen	NPAssn	104	72	36	719	3,487
[illegible]	Card	NPAssn	60	59	..	...	122
[illegible]	Chil	NPAssn	160	113	..	...	4,954
Children's Hospital of the Mary J. Drexel Home+▲	Chil	Church	45	21	..	...	1,414
[illegible]	Gen	Church	60	30	18	305	1,052
[illegible]	Gen	NPAssn	40	26	12	229	880
[illegible]	Gen	NPAssn	177	98	40	837	4,230
[illegible]	Gen	NPAssn	495	280	55	1,428	8,019
Fairmount Farm	N&M	Corp	82	55	..	...	559
Frankford Hospital*+▲◇	Gen	NPAssn	141	119	68	1,866	7,171
Friends Hospital+▲○	N&M	NPAssn	190	162	..	...	325
Garretson Hospital	Unit of Temple University Hospital						
Germantown Dispensary and Hospital*+▲◇	Gen	NPAssn	320	222	60	1,612	8,253
Graduate Hospital of the University of Pennsylvania*+▲	Gen	NPAssn	356	245	..	...	7,981
Hahnemann Hospital*+▲◇	Gen	NPAssn	577	419	91	2,420	14,561
Hall-Mercer Hospital	Associated with Institute of the Pennsylvania Hospital, Philadelphia						
Hospital of the University of Pennsylvania*+▲◇	Gen	NPAssn	715	572	64	2,005	20,680

Key to symbols and abbreviations is on page 124

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hospital of the Woman's Medical College of Pennsylvania★+▲◇	Gen	NPAssn	173	135	38	1,162	6,141
Institute of the [illegible]▲	N&M	NPAssn	94	62	..	...	306
[illegible]	Cancer	NPAssn	80	48	..	...	1,662
[illegible]	GenTb	NPAssn	696	608	79	2,439	18,067
[illegible]	Gen	NPAssn	420	315	46	1,548	10,874
[illegible] Hospital	Gen	NPAssn	82	70	13	244	2,509
[illegible]	Gen	NPAssn	260	184	34	748	6,277
	Unit of Pennsylvania Hospital						
[illegible]	Gen	NPAssn	117	84	20	763	3,605
[illegible]	Gen	NPAssn	101	80	29	483	2,464
[illegible]	Gen	Church	235	149	29	779	5,316
[illegible]	Gen	Church	220	196	50	1,746	7,118
[illegible]	Gen	NPAssn	259	204	55	1,459	8,937
[illegible]	Gen	Church	150	128	50	2,412	6,637
Northeastern Hospital▲◇	Gen	NPAssn	82	59	20	507	2,538
[illegible]	Gen	NPAssn	58	42	11	252	1,909
	Unit of Temple University Hospital						
[illegible]	Gen	NPAssn	430	295	88	2,697	10,442
[illegible]	N&M	NPAssn	217	178	.	.	404
Philadelphia General Hospital★+▲◇	Gen	City	2,500	1,847	89	3,151	20,042
Philadelphia Hospital for Contagious Diseases+▲⊙	IsoTb	City	700	287	..	...	1,814
Philadelphia Psychiatric Hospital+▲	N&M	NPAssn	64	56	..	...	483
Philadelphia State Hosp.+▲⊙	Ment	State	6,588	6,113	..	...	596
Physicians and Surgeons Hospital	Gen	NPAssn	50	14	12	128	1,233
Presbyterian Hospital★+▲◇	Gen	Church	340	235	42	756	7,176
[illegible]▲	Mat	NPAssn	50	10	35	369	398
[illegible]▲	TB	NPAssn	168	124	.	.	236
[illegible]	Gen	Church	250	204	60	1,296	7,765
[illegible]▲	Chil	NPAssn	100	58	.	...	2,377
St. Joseph's Hospital★+▲◇	Gen	Church	201	137	34	936	4,874
St. Luke's and Children's Medical Center★+▲	Gen	NPAssn	217	148	68	1,006	7,064
St. Mary's Hospital★+▲◇	Gen	Church	230	162	50	1,334	6,910
St. Vincent's Hospital for Women and Children▲	Gen	Church	116	80	24	788	1,390
[illegible]	Orth	NPAssn	120	91	.		212
[illegible]	SkCa	NPAssn	31	18	.		413
[illegible]▲	Gen	NPAssn	64	36	12	329	1,437
[illegible]	Gen	NPAssn	543	474	59	2,346	15,175
[illegible]	Gen	Navy	1,813	1,311	27	934	14,748
[illegible]	Urol	Part	15	7			484
[illegible]	Eye	NPAssn	200	141			4,016
[illegible]	Gen	Indiv	25	22			424
[illegible]	Gen	NPAssn	137	94	48	1,144	4,485
Hospital+▲	Gen	NPAssn	179	112	39	741	5,129
Wynnefield Hospital	Gen	Indiv	25	9	9	20	925
Philipsburg, 3,991—Centre							
[illegible]	Gen	Indiv	25	20	12	239	747
[illegible]▲	Gen	State	138	123	18	715	4,289
[illegible]▲	Gen	NPAssn	83	53	20	538	2,718
Valley Forge Army Hospital▲	Gen	Army	1,800	1,089	19	184	2,622
Pittsburgh, [illegible]							
[illegible]	Gen	NPAssn	554	427	81	2,712	12,583
[illegible]	Gen	NPAssn	28	13	10	157	618
[illegible]	Chil	NPAssn	225	169	..	...	5,787
[illegible]▲	Gen	NPAssn	350	276	175	4,636	10,375
Eye, Ear, Nose and Throat Hospital+▲⊙	ENT	NPAssn	116	90	3	...	6,394
Fairview Sanatorium	N&M	Corp	15	13	..	...	58
Mercy Hospital★+▲◇	Gen	Church	654	606	65	2,270	14,346
Montefiore Hospital★+▲◇	Gen	NPAssn	277	238	34	1,251	7,878
Municipal Hospital▲⊙	Iso	City	120	50	.	...	907
Passavant Hospital▲	Gen	NPAssn	92	61	20	408	2,145
Pittsburgh Hospital★+▲◇	Gen	NPAssn	225	194	35	1,375	6,471
Pittsburgh Tuberculosis Hospital▲	TB	City	446	413	..		490
Presbyterian Hospital★+▲◇	Gen	NPAssn	235	203	..	...	5,089
Roselia Foundling and Maternity Hospital▲	MatChil	NPAssn	132	134	28	506	733
St. Francis Hospital★+▲◇	Gen	NPAssn	701	670	40	1,725	12,540
St. John's General Hosp.★▲◇	Gen	NPAssn	197	171	53	1,964	7,198
St. Joseph's Hospital and Dispensary★▲◇	Gen	Church	170	148	30	1,150	6,285
St. Margaret Memorial Hospital★+▲◇	Gen	Church	122	87	21	598	3,331
Shadyside Hospital★▲◇	Gen	NPAssn	300	275	41	1,374	10,031
South Side Hospital★+▲◇	Gen	NPAssn	310	150	54	938	5,870
Tuberculosis League Hospital+▲⊙	TB	NPAssn	150	138	..	.	202
Western Pennsylvania Hospital★+▲◇	Gen	NPAssn	542	432	68	1,787	13,636
[illegible]▲	Ment	NPAssn	170	125	..	...	195
Hospital	Inst	State	39	29	..	...	586
Woman's Hospital▲	Gen	NPAssn	115	100	..	...	2,888
Pittston, 14,992—Luzerne							
Pittston Hospital▲◇	Gen	NPAssn	122	83	23	792	3,707

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Polk, 4,007—Venango							
Polk State School	MeDe	State	3,525	3,190	..	...	148
P[illegible]							
Hospital	Gen	NPAssn	18	11	8	107	711
P[illegible]							
[illegible]	Inst	NPAssn	40	2	.	...	314
[illegible]▲	Gen	NPAssn	72	53	20	613	2,702
[illegible] Hospital+▲◇	Gen	NPAssn	100	79	26	681	3,996
[illegible]▲	Gen	NPAssn	161	123	39	775	5,744
Clinic▲	Gen	NPAssn	75	28	17	219	1,600
Pottsville Hospital▲	Gen	NPAssn	155	139	17	668	4,230
Punxsutawney, 8,902—Jefferson							
Adrian Hospital	Gen	NPAssn	82	62	17	575	2,386
Quakertown, 5,682—Bucks							
Quakertown Community Hospital▲	Gen	NPAssn	61	30	17	331	1,500
Reading, 109,062—Berks							
Berks County Tuberculosis Sanatorium▲	TB	County	143	102	.		113
[illegible]▲	Gen	NPAssn	123	97	27	672	3,932
[illegible]	Gen	NPAssn	383	299	68	2,093	10,562
[illegible]	Gen	Church	206	164	35	1,049	6,313
[illegible]	Gen	NPAssn	24	18	6	185	1,147
Retreat, 2,000—Luzerne							
Retreat State Hospital▲	Ment	State	1,175	1,118	..	...	149
Ridgway, 6,251—Elk							
Elk County General Hospital	Gen	NPAssn	72	51	14	363	2,132
Ridley Park, 4,916—Delaware							
Taylor Hospital	Gen	NPAssn	70	67	18	584	3,116
Roaring Spring, 2,762—Blair							
Nason Hospital	Gen	NPAssn	65	52	15	484	2,013
Rochester, 7,169—Beaver							
Rochester General Hosp.★▲	Gen	NPAssn	138	118	33	1,187	4,773
St. Marys, 7,852—Elk							
[illegible]▲	Gen	Church	80	61	20	581	●2,958
Sa[illegible]							
[illegible]	Gen	NPAssn	304	254	21	745	10,482
Scranton, 124,747—Lackawanna							
Hahnemann Hospital▲◇	Gen	NPAssn	151	115	40	1,398	4,783
Lackawanna County Tuberculosis Hospital▲	TB	County	165	135			100
Mercy Hospital▲◇	Gen	Church	105	72	35	790	2,773
Moses Taylor Hospital★▲◇	Gen	NPAssn	120	91	.	..	2,487
St. Joseph Children's and Maternity Hospital▲⊙	MatChil	Church	149	140	4	61	245
St. Mary's Hospital▲◇	Gen	Church	66	44	14	313	1,575
Scranton State Hospital★+▲◇	Gen	State	290	223	20	1,070	6,405
West Side Hospital▲	Gen	NPAssn	81	50	10	260	1,642
Sellersville, 2,368—Bucks							
Grand View Hospital▲◇	Gen	NPAssn	75	52	24	683	2,717
Sewickley, 5,730—Allegheny							
Sewickley Valley Hosp.★▲◇	Gen	NPAssn	187	164	40	1,613	5,754
Shamokin, 16,884—Northumberland							
Shamokin State Hospital▲	Gen	State	89	72	26	648	3,767
Sharon, 26,305—Mercer							
Sharon General Hospital+▲◇	Gen	NPAssn	234	168	46	1,737	9,018
Shenandoah, 15,792—Schuylkill							
Locust Mountain State Hosp.▲	Gen	State	77	59	14	576	2,757
Somerset, 5,940—Somerset							
Somerset Community Hospital	Gen	NPAssn	77	51	20	674	2,639
South Mountain, 200—Franklin							
Pennsylvania State Sanatorium No. 1 (Mont Alto)▲	TB	State	1,389	836	..	...	456
Spangler, 3,019—Cambria							
Miners' Hospital of Northern Cambria▲◇	Gen	NPAssn	83	66	15	831	3,444
Spring City, 3,269—Chester							
Pennhurst State School	MeDe	State	3,500	2,690	..	...	330
St[illegible]							
Health Service Hospital	Inst	State	30	9	.	...	1,320
Sunbury, 15,600—Northumberland							
Sunbury Community Hospital	Gen	NPAssn	74	62	14	546	2,491
Susquehanna, 2,653—Susquehanna							
Simon H. Barnes Memorial Hospital	Gen	NPAssn	16	8	5	148	482
Tarentum, 9,540—Allegheny							
[illegible]l▲◇	Gen	NPAssn	188	150	40	1,715	7,170
[illegible]▲	Gen	NPAssn	49	36	13	314	2,283
Titusville, 8,921—Crawford							
Titusville Hospital▲	Gen	NPAssn	65	42	22	401	1,959
Torrance, 500—Westmoreland							
Torrance State Hospital▲⊙	Ment	State	2,888	2,757	..	...	701
Union City, 3,883—Erie							
Henry L. Stem Memorial Hospital	Gen	NPAssn	26	15	16	232	1,033
Uniontown, 20,423—Fayette							
Uniontown Hospital★+▲◇	Gen	NPAssn	270	237	40	1,819	9,210
Warren, 14,747—Warren							
Warren General Hospital▲	Gen	NPAssn	92	86	22	652	4,455
Warren State Hospital+▲⊙	Ment	State	2,849	2,815	..	...	847
[illegible]gton							
[illegible]▲	Gen	Corp	49	43	..	...	340
[illegible]▲	Gen	NPAssn	201	172	46	1,452	6,351
Wawa, 500—Delaware							
Wawa Chest Hospital	TB	NPAssn	25	23	..	...	40
Waymart, 1,060—Wayne							
Farview State Hospital	Ment	State	1,313	1,254	..	...	122
Waynesboro, 10,321—Franklin							
Waynesboro Hospital	Gen	NPAssn	72	60	20	706	3,020

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Waynesburg, 5,494—Greene							
Greene County Memorial Hospital▲	Gen	NPAssn	114	91	24	1,061	4,100
Wellsboro, 4,298—Tioga							
Soldiers and Sailors Memorial Hospital	Gen	NPAssn	40	34	16	354	1,799
Wernersville, 1,281—Berks							
Wernersville State Hospital▲	Ment	State	1,600	1,874	.	..	477
West Chester, 15,109—Chester							
Chester County Hospital+▲◇	Gen	NPAssn	155	123	25	926	4,750
Darlington Sanitarium	N&M	NPAssn	70	32	..	...	110
Marshall Square Sanitarium	N&M	Indiv	120	100	.	...	219
Memorial Hospital of Chester County▲	Gen	NPAssn	66	46	14	274	1,672
White Haven, 1,442—Luzerne							
White Haven Sanatorium+▲	Unit of Jefferson Medical College Hospital, Philadelphia						
[illegible]							
[illegible]	N&M	Indiv	50	45	..	.	304
Mercy Hospital★+▲◇	Gen	Church	189	180	50	992	6,487
Veterans Admin. Hospital	Gen	Vet	472	...	..	Estab. 1950	
Wilkes-Barre General Hospital★+▲◇	Gen	NPAssn	362	253	64	1,585	9,686
[illegible]▲	Gen	NPAssn	89	61	20	664	2,693
[illegible] heny							
[illegible]▲	Gen	Church	189	152	64	1,408	5,823
Williamsport, 44,964—Lycoming							
Rothfuss Clinic and Hospital	Gen	Indiv	25	13	12	165	655
Williamsport Hospital★+▲◇	Gen	NPAssn	260	224	44	1,544	8,848
Windber, 8,046—Somerset							
Windber Hospital▲	Gen	NPAssn	107	94	12	409	3,432
[illegible]							
[illegible]							
[illegible]▲	InstGen	County	1,917	1,729	..	..	1,186
[illegible]+▲	Ment	State	2,732	2,627	.		476
York, 59,704—York							
York Hospital★+▲◇	Gen	NPAssn	238	189	52	2,086	8,293

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Bellefonte, 5,614—Centre							
Western State Penitentiary Hospital	Inst	State	19	5	..	...	457
Broomall, 1,200—Delaware							
Convalescent Hospital	Conv	NPAssn	29	21	..	...	349
Rest Haven for Convalescents	Conv	Part	87	84	..	...	152
Bryn Mawr, 10,206—Montgomery							
Bryn Mawr College Infirmary	Inst	NPAssn	21	5	..	...	546
Cambridge Springs, 2,231—Crawford							
San Rosario Sanitarium	Conv	Church	34	20	..	...	550
Camp Hill, 5,780—Cumberland							
Pennsylvania Industrial School	Inst	State	37	21	..	...	590
Ebensburg, 4,081—Cambria							
Cambria County Hospital	Inst	County	141	140	..	...	244
[illegible]							
[illegible]	Ment	State	350	326	.	...	29
[illegible]							
[illegible]	Chil	NPAssn	50	36	..	...	127
Lakeview Hospital	Iso	City	80	14	..	...	172
Harmarville, 900—Allegheny							
Harmarville Convalescent Home	Conv	NPAssn	30	18	..	...	159
Harrisburg, 89,091—Dauphin							
Dauphin County Hospital	Inst	County	191	173	.	...	138
Lancaster, 63,601—Lancaster							
Children's Heart Haven	Card	NPAssn	30	.	..	Estab. 1950	
Malvern, 1,746—Chester							
Point Comfort Rest Home	Conv	Indiv	46	36	.		22
[illegible]							
[illegible]	Gen	NPAssn	15	..	9	Estab. 1950	
Mercer, 2,590—Mercer							
Mercer County Home and *Hospital*	*Chr*	*County*	*75*	*74*	..	...	*45*
North East, 4,254—Erie							
St. Barnabas House by the Lake	Conv	Church	35	35	..	...	17
Olyphant, 7,019—Lackawanna							
Blakely Home and Hospital	Chr	County	220	231	..	...	115
Philadelphia, 2,064,794—Philadelphia							
Booth Memorial Hospital	Mat	Church	10	5	10	156	197
Philadelphia County Prison [illegible]	Inst	County	38	23	..	...	426
[illegible]	Inst	County	42	15	..	...	547
[illegible] Incurables	Incur	NPAssn	262	242	..	...	40
Pine Hall Convalescent Home	Conv	Indiv	*21*	*15*	..	...	15
Sharon Hall	Conv	Corp	50	50	..	...	84
Tel-Aviv Home for Elderly People	Conv	NPAssn	90	75	..	...	200
[illegible]							
[illegible]	Mat	Church	7	4	6	96	108
[illegible]	Orth	NPAssn	86	78	..	...	62
Rochester, 7,169—Beaver							
Passavant Memorial Homes for the Care of Epileptics	Epil	Church	175	100	..	...	5
Scranton, 124,747—Lackawanna							
Eye, Ear, Nose and Throat Center	ENT	Part	9	3	..	...	710
Municipal Hospital	Iso	City	50	*10*	10	...	105
Selinsgrove, 3,497—Snyder							
Selinsgrove State Colony for Epileptics	Epil	State	982	981	..	...	69

PENNSYLVANIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Somerset, 5,940—Somerset							
Somerset State Hospital	Ment	State	589	425	..	...	70
Towanda, 4,056—Bradford							
Community Hospital	Gen	NPAssn	19	14	8	212	330
Willow Grove, 12,000—Montgomery							
Willow Crest for Convalescents	Conv	NPAssn	78	68	..	...	1,300

RHODE ISLAND

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
East Greenwich, 4,887—Kent							
Crawford Allen Memorial Hospital	Unit of Rhode Island Hospital, Providence						
Hillsgrove, 1,000—Kent							
St. Joseph's Hospital	TB	Church	65	41	..	...	32
Howard, 5,000—Providence							
State Hospital for Mental Diseases+▲◇	Ment	State	3,341	3,166	..	...	1,213
State Infirmary▲	GenChr	State	990	819	20	...	850
Newport, 32,090—Newport							
Newport Hospital★▲◇	Gen	NPAssn	199	109	36	687	4,100
U. S. Naval Hospital★▲	Gen	Navy	599	415	11	593	6,187
Pawtucket, 81,180—Providence							
Memorial Hospital★▲◇	Gen	NPAssn	172	166	30	1,478	7,513
Providence, 247,700—Providence							
Butler Hospital+▲◇	N&M	NPAssn	165	134	..	...	194
Charles V. Chapin Hospital+▲⊙	TbIsoN&M	City	265	131	..	...	3,124
Jane Brown Memorial Hosp.	Unit of Rhode Island Hospital						
[illegible]	Gen	NPAssn	20	5	10	156	546
[illegible]▲	Gen	*NPAssn*	*63*	*43*	*12*	*258*	*2,113*
[illegible]▲	Mat	NPAssn	175	121	175	6,520	7,502
Rhode Island Hospital★+▲◇	Gen	NPAssn	569	500	..	...	15,691
Roger Williams General Hospital★+▲◇	Gen	NPAssn	162	140	34	1,482	6,377
St. Joseph Hospital★▲◇	Gen	Church	310	228	60	2,670	8,240
Veterans Admin. Hospital▲	Gen	Vet	393	306	..	...	3,191
Quonset Point, 980—Washington							
U. S. Naval Air Station Infirmary	Gen	Navy	80	79	26	715	2,686
Riverside, 5,000—Providence							
Emma Pendleton Bradley Home▲	NervChil	NPAssn	54	46	..	...	44
Wakefield, 4,000—Washington							
South County Hospital	Gen	NPAssn	46	33	11	418	1,643
Wallum Lake, 100—Providence							
State Sanatorium▲	TB	State	572	432	..	...	308
Westerly, 8,408—Washington							
Westerly Hospital▲	Gen	NPAssn	60	45	20	540	2,321
Woonsocket, 50,186—Providence							
Woonsocket Hospital▲	Gen	NPAssn	150	103	37	1,528	5,560

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Hoxsie, 135—Kent							
Lakeside Home and Mary Murray Preventorium	TbChil	NPAssn	50	42	..	...	124
La Fayette, 600—Washington							
Exeter School	MeDe	State	838	833	..	...	69
[illegible]	Incur	Church	70	69	...	...	14

SOUTH CAROLINA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Abbeville, 5,377—Abbeville							
Abbeville County Memorial Hospital	Gen	CyCo	31	17	5	319	1,059
Aike							
Ai [illegible]▲	Gen	County	70	53	10	592	2,951
And							
Anderson County Memorial Hospital▲◇	Gen	NPAssn	218	148	38	1,557	7,686
St. Mary's Hospital	Gen	NPAssn	30	12	6	23	318
[illegible]							
[illegible]	Gen	County	54	31	10	204	1,587
[illegible]	Gen	Navy	299	159	17	227	3,018
[illegible]							
Marlboro County General Hospital▲	Gen	NPAssn	82	58	20	558	3,560
C[illegible]							
[illegible]▲	Gen	NPAssn	76	51	13	451	3,316
Charleston, [illegible]—Charleston							
Baker Memorial Sanatorium▲	Gen	NPAssn	60	29	14	332	1,735
Pinehaven Sanatorium	TB	County	73	69	..	...	163
Roper Hospital★+▲◇	Gen	NPAssn	450	346	60	1,590	13,666
St. Francis Xavier Infirmary▲◇	Gen	Church	111	72	26	856	3,533
U. S. Naval Hospital★▲	Gen	Navy	550	379	12	482	6,066
Chester, 6,891—Chester							
Chester County Hospital	Gen	County	46	27	10	327	1,636
Clinton, 7,158—Laurens							
[illegible]	Gen	Part	22	10	6	72	901
[illegible]							
[illegible]▲	Gen	County	442	279	50	1,204	9,942
[illegible]▲	Gen	Church	97	69	27	780	3,477
[illegible] Sanatorium	TB	NPAssn	56	45	..	...	33
South Carolina Baptist Hospital▲◇	Gen	Church	205	177	30	1,075	7,365

Key to symbols and abbreviations is on page 124

SOUTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
South Carolina State Hosp.⊙	Ment	State	5,326	5,217	..	...	2,056
Veterans Admin. Hospital+▲	Gen	Vet	609	598	..	...	7,058
Waverley Sanitarium	N&M	Corp	33	26	..	...	129
Conway, 6,083—Horry							
Conway Hospital▲	Gen	NPAssn	65	46	19	1,069	6,221
Dillon, 5,162—Dillon							
St. Eugene Hospital	Gen	Church	60	41	15	544	2,251
Florence, 22,378—Florence							
Florence-Darlington Tuberculosis Sanatorium	TB	Counties	80	72	..	...	103
McLeod Infirmary★▲◇	Gen	NPAssn	200	144	38	840	7,633
Saunders Memorial Hospital	Gen	Corp	77	...	16	...	...
South Carolina Public Health Hospital	Ven	State	250	145	6	...	7,010
[illegible]▲	Gen	Army	1,020	302	17	73	4,407
Cherokee County Hospital	Gen	County	57	45	8	696	3,201
Georgetown, 6,012—Georgetown							
Georgetown County Memorial Hospital	Gen	NPAssn	54	...	15	Estab. 1950	
[illegible]	TB	County	75	65	..	...	54
[illegible]▲	Gen	CyCo	331	294	31	2,431	12,624
[illegible]	ENT	Indiv	15	3	..	...	395
[illegible]▲	Gen	Church	114	73	20	1,064	5,245
[illegible]▲	Orth	NPAssn	60	56	..	...	238
Greenwood, 13,672—Greenwood							
Brewer Hospital	Gen	Corp	32	24	4	171	838
Greenwood Hospital▲	Gen	NPAssn	85	68	18	643	2,927
Hartsville, 5,643—Darlington							
Byerly Hospital	Gen	NPAssn	74	58	18	543	4,089
Hemingway, 536—Williamsburg							
Johnson Memorial Hospital	Gen	Indiv	56	22	10	125	1,430
[illegible]	Gen	NPAssn	55	22	13	...	1,574
[illegible]	Gen	Indiv	13	10	5	145	554
[illegible]▲	Gen	NPAssn	50	34	16	830	3,620
[illegible]	Gen	County	62	28	14	312	1,510
[illegible]	Gen	NPAssn	44	24	12	241	1,204
Martin Private Hospital	Gen	Indiv	45	22	12	296	3,220
Mullins Hospital	Gen	City	65	45	18	630	3,176
[illegible]	Gen	County	31	28	12	342	1,663
[illegible]	N&M	NPAssn	100	65	..	...	385
[illegible]▲	Gen	City	202	103	24	669	5,330
Urological Institute	Unit of Orangeburg Hospital						
Pickens, 2,587—Pickens							
Cannon Memorial Hospital	Gen	Indiv	70	34	12	137	1,738
[illegible]	Gen	NPAssn	38	17	10	215	1,008
[illegible]	Gen	Indiv	14	2	..	...	320
[illegible]	Gen	Church	65	62	16	564	3,252
[illegible]▲	Gen	County	143	96	20	780	4,771
Seneca, [illegible]—Oconee							
Oconee Memorial Hospital	Gen	NPAssn	78	45	14	653	3,778
Spartanburg, 36,674—Spartanburg							
Mary Black Memorial Hospital▲	Gen	NPAssn	60	36	9	110	2,077
Spartanburg General Hospital★+▲◇	Gen	County	359	267	75	2,588	12,725
Spartanburg Tuberculosis Hospital⊙	TB	County	82	63	..	...	67
State Park, 100—Richland							
Palmetto Sanatorium	Unit of South Carolina Sanatorium						
[illegible]▲	TB	State	550	412	..	...	521
[illegible]	Gen	County	52	20	16	177	1,317
Sumter, 19,812—Sumter							
Tuomey Hospital▲◇	Gen	NPAssn	158	129	32	1,019	5,718
Travellers Rest, 1,200—Greenville							
Coleman Hospital	Gen	Indiv	25	10	5	86	306
Walterboro, 4,601—Colleton							
Colleton County Hospital	Gen	County	72	40	20	341	2,794

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Clinton, 7,158—Laurens							
State Training School	MeDe	State	1,307	1,257	..	...	459
Greenville, 57,932—Greenville							
McClaren Medical Shelter	Gen	Indiv	10	3	3	17	98

SOUTH DAKOTA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aberdeen, 20,976—Brown							
St. Luke's Hospital▲◇	Gen	Church	235	189	50	1,157	7,804
Belle Fourche, 3,517—Butte							
John Burns Memorial Hospital	Gen	NPAssn	50	29	10	250	1,681
B[illegible]							
[illegible]	Gen	Church	25	16	9	273	1,262
Brookings, [illegible]—Brookings							
Brookings Municipal Hospital	Gen	City	48	31	12	384	1,093

SOUTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Burke, 602—Gregory							
Community Memorial Hosp.	Gen	NPAssn	30	12	10	142	999
Chamberlain, 1,912—Brule							
Community Bailey Hospital	Gen	City	36	...	8	Estab. 1950	
Cheyenne Agency, 121—Dewey							
Cheyenne River Indian Hosp.	Gen	IA	40	16	6	64	512
[illegible]▲	Gen	Church	68	64	16	507	2,316
[illegible]	Gen	Part	16	10	6	82	539
Eureka, 1,579—McPherson							
Eureka Community Hospital	Gen	NPAssn	26	19	8	208	1,134
Flandreau, 2,197—Moody							
Flandreau Municipal Hospital	Gen	City	20	9	5	162	608
Fort Meade,—Meade							
Veterans Admin. Hospital	Ment	Vet	720	639	..	...	370
Gregory, 1,376—Gregory							
Mother of Grace Hospital	Gen	NPAssn	15	9	6	100	626
Hot Springs, 4,980—Fall River							
Lutheran Hospital	Gen	Church	65	55	12	177	1,281
Our Lady of Lourdes Hospital	Gen	Church	55	33	11	149	1,422
Veterans Admin. Center▲	Gen	Vet	270	220	..	...	1,645
Hoven, 369—Potter							
Holy Infant Hospital	Gen	Church	45	23	8	151	1,206
Huron, 12,713—Beadle							
St. John's Hospital▲◇	Gen	Church	150	91	20	747	4,129
Igloo, 3,800—Fall River							
U. S. Army Hospital	Gen	Army	39	2	4	47	225
Lead, 6,419—Lawrence							
Homestake Hospital▲	Gen	NPAssn	25	16	5	4	540
Madison, 5,142—Lake							
Madison Community Hosp.▲	Gen	NPAssn	50	40	12	322	1,781
Martin, 1,013—Bennett							
St. Anthony's Hospital	Gen	Church	14	12	4	68	687
Milbank, 2,981—Grant							
St. Bernard's Providence Hospital	Gen	Church	40	19	10	202	901
Miller, 1,902—Hand							
Hand County Memorial Hosp.	Gen	County	30	11	12	190	686
Mitchell, 12,062—Davison							
Methodist State Hospital▲◇	Gen	Church	116	78	21	368	3,221
St. Joseph's Hospital▲◇	Gen	Church	118	98	20	653	3,791
Mobridge, 3,747—Walworth							
Lowe Hospital	Gen	Indiv	20	13	6	192	827
Mobridge Hospital	Gen	NPAssn	35	18	9	156	957
Parkston, 1,358—Hutchinson							
St. Benedict Hospital	Gen	Church	35	18	12	263	947
Pierre, 5,690—Hughes							
St. Mary's Hospital▲	Gen	Church	115	87	20	451	3,857
Pine Ridge, 618—Shannon							
Pine Ridge Indian Hospital	Gen	IA	35	30	13	176	1,302
Rapid City, 25,179—Pennington							
Black Hills General Hosp.▲	Gen	NPAssn	41	45	13	374	2,497
St. John's McNamara Hospital▲◇	Gen	Church	100	91	25	811	4,684
Sioux Sanatorium▲	TB	IA	130	116	..	...	275
Rosebud, 258—Todd							
Rosebud Indian Hospital	Gen	IA	40	25	7	147	1,016
Sanator, 10—Custer							
South Dakota State Sanatorium for Tuberculosis▲	TB	State	192	121	..	...	117
Sioux Falls, 52,161—Minnehaha							
[illegible]▲◇	Gen	Church	164	161	50	1,322	7,323
[illegible]▲◇	Gen	NPAssn	190	171	30	1,288	8,832
Veterans Admin. Center	Gen	Vet	273	150	..	...	2,440
Sisseton, 2,873—Roberts							
Roberts County Community Hospital	Gen	NPAssn	18	12	6	102	700
[illegible]	Gen	IA	32	25	8	74	956
[illegible]	Gen	Church	40	28	8	100	778
Tyndall, 1,289—Bon Homme							
St. Michael's Hospital	Gen	Church	25	10	10	71	356
Volga, 632—Brookings							
Volga Hospital	Gen	NPAssn	18	9	8	115	442
Watertown, 12,662—Codington							
Bartron Hospital▲◇	Gen	NPAssn	75	50	16	408	2,479
Lutheran Hospital▲	Gen	Church	80	37	12	333	2,529
St. Ann Hospital	Gen	Church	70	..	12	Estab. 1950	
Webster, 2,506—Day							
Peabody Memorial Hospital▲	Gen	NPAssn	50	23	12	233	1,393
Wessington Springs, 1,450—Jerauld							
Memorial Hospital	Gen	County	26	14	6	90	729
Yankton, 7,704—Yankton							
Sacred Heart Hospital★▲◇	Gen	Church	230	159	24	815	5,422
Yankton State Hospital	Ment	State	1,888	1,699	..	...	509

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Garretson, 666—Minnehaha							
DeVall Hospital	Gen	Indiv	10	1	2	8	30
Hot Springs, 4,980—Fall River							
State Soldiers Home Hospital	Inst	State	36	20	..	...	259
Redfield, 2,642—Spink							
State School and Home for Feebleminded	MeDe	State	800	749	..	...	69
Viborg, 659—Turner							
Viborg Hospital	Gen	Indiv	11	7	5	70	200
Wagner, 1,518—Charles Mix							
Duggan Hospital	Gen	Part	17	11	7	...	611
Yankton Indian Hospital	Gen	IA	25	11	5	54	450

TENNESSEE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Athens, 8,599—McMinn							
Epperson Clinic-Hospital	Gen	Indiv	60	23	8	376	1,728
Foree Hospital	Gen	Part	32	23	10	373	1,820
Bristol, 16,721—Sullivan							
[illegible]	ENT	Part	10	2	..	..	601
[illegible]							
[illegible]							
Hospital	Gen	NPAssn	35	22	12	273	1,677
Welch Clinic-Hospital	Gen	Indiv	14	4	4	56	241
Chattanooga, 130,333—Hamilton							
Baroness Erlanger							
Hospital★+▲◇	Gen	CyCo	450	353	90	3,320	16,424
Barton Clinic-Hospital	Gen	Indiv	16	9	..	...	426
Carver Memorial Hospital	Gen	CyCo	50	17	12	341	804
Doyle Currey Clinic-Hospital	Gen	Indiv	25	16	11	...	...
Earl R. Campbell Clinic-Hosp.	Gen	Corp	29	21	7	155	1,505
Newell Hospital▲	Gen	Corp	50	34	6	77	1,776
Park View Hospital	Gen	Indiv	20	12	12	320	837
Physicians and Surgeons							
Hospital	Gen	Indiv	24	16	12	372	1,035
Pine [illegible]▲	TB	NPAssn	174	165		..	152
T[illegible]							
[illegible]▲	Chil	CyCo	75	75	25	.	3,141
[illegible]	Gen	Indiv	50	34	24	363	1,215
[illegible]	Gen	NPAssn	45	36	16	576	2,516
Cleveland, 12,445—Bradley							
Physicians and Surgeons							
Hospital	Gen	Indiv	25	7	4	115	706
Speck Hospital	Gen	NPAssn	25	17	10	573	1,653
Columbia, 10,921—Maury							
[illegible]	Gen	NPAssn	50	28	14	544	1,949
[illegible]	Gen	NPAssn	25	6	8	...	39
[illegible]	Gen	City	50	...	16	Estab. 1950	
[illegible]—Cumberland							
Cumberland Medical Center	Gen	City	50	...	12	Estab. 1950	
Dandridge, 488—Jefferson							
Sullenberger Clinic and							
Hospital	Gen	Indiv	12	5	3	45	286
Dayton, 3,191—Rhea							
Broyles Hospital	Gen	Indiv	14	4	6	65	189
Thomison Hospital	Gen	Indiv	12	6	4	35	275
Dyersburg, 10,865—Dyer							
Baird-Brewer General Hosp.▲	Gen	Corp	46	25	10	468	2,010
[illegible]							
[illegible]	Gen	Corp	35	21	8	434	2,737
[illegible]	Gen	Corp	35	25	12	409	1,878
Erwin, [illegible]—Unicoi							
Erwin Community Hospital	Gen	NPAssn	17	6	9	287	1,017
Fayetteville, 5,441—Lincoln							
[illegible]	Gen	Indiv	28	4	4	95	359
F[illegible]							
[illegible]	Gen	Church	27	22	7	183	463
[illegible]	Gen	Indiv	14	4	4	35	462
[illegible]—Greene							
Greeneville Sanatorium and							
Hospital▲	Gen	Corp	50	32	16	280	1,593
Laughlin Clinic-Hospital	Gen	Indiv	30	27	10	305	1,215
Learline Reaves Sanatorium	TB	State	32	23	..	...	121
Takoma Hospital and							
Sanitarium▲	Gen	NPAssn	65	45	12	228	1,784
Harriman, 6,387—Roane							
[illegible]	Gen	City	42	30	8	478	2,171
[illegible]	Gen	Indiv	10	5	4	45	357
[illegible]	Gen	Church	50	27	10	523	2,093
[illegible]							
Jackson-Madison County							
General Hospital	Gen	CyCo	128	...	32	Estab. 1950	
Webb-Williamson Hospital-							
Clinic	Gen	Corp	26	21	6	352	1,424
[illegible]	Gen	Part	26	13	10	234	1,204
[illegible]▲	Gen	NPAssn	77	65	21	1,028	4,282
[illegible]	Gen	Indiv	12	8	4	67	512
[illegible]	ENT	Indiv	5	2	..	...	395
[illegible]▲	ENT	Part	27	12	..	...	1,494
[illegible]	Gen	Indiv	20	13	8	...	709
K[illegible]							
Holston Valley Community							
Hospital▲	Gen	NPAssn	167	163	42	1,765	8,313
[illegible]	TB	CyCo	140	98	..	...	165
[illegible]	ENT	Indiv	11	3	..	...	660
[illegible]	Ment	State	2,175	2,159	..	..	619
[illegible]	Gen	Church	216	149	36	1,347	7,488
[illegible]▲	Gen	NPAssn	200	174	25	1,325	7,432
[illegible]▲	Gen	City	285	183	40	1,219	8,993
[illegible]▲	Gen	Church	250	160	30	1,150	7,065
L[illegible]							
[illegible] Hospital	Gen	Corp	23	10	7	233	801
[illegible]ce							
[illegible]							
[illegible]	Gen	Church	40	13	10	365	1,281
Lebanon, 7,915—Wilson							
Martha Gaston Hospital	Gen	Indiv	25	15	10	250	1,364

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]	Gen	Indiv	43	42	6	420	3,254
[illegible]	Gen	Corp	36	27	7	56	1,334
Wheat Memorial Hospital	Gen	Indiv	13	7	6	131	353
[illegible]							
[illegible]	Gen	Indiv	12	4	7	99	340
Charles H. Bacon Hospital	Gen	County	30	12	14	334	817
Madison College, 510—Davidson							
Madison Rural [illegible]							
[illegible]▲	Gen	NPAssn	165	135	20	,453	3,867
[illegible]	Gen	County	119	70	24	1,096	4,635
[illegible]	Gen	Part	25	14	8	453	1,186
[illegible]▲	Gen	Church	500	445	50	2,358	20,441
[illegible]▲	Orth	Part	60	53	..	...	1,950
[illegible]	N&M	Indiv	33	26	..	...	360
Hospital	Gen	Church	60	50	15	220	1,306
Crippled Children's Hospital							
School	Orth	NPAssn	49	40	..	...	81
Gailor Memorial Psychiatric							
Hospital⊙	Ment	State	54	55	..	...	452
Gartly-Ramsay Hospital▲	N&M	Corp	50	45	..	...	1,349
Hospital for Crippled Adults▲	Orth	NPAssn	56	40	..	...	496
John Gaston Hospital★+▲◇	Gen	City	489	478	61	3,402	17,916
McLemore Clinic-Hospital	Gen	Corp	48	22	6	77	1,097
[illegible]							
[illegible]▲	ENT	Church	60	35	..	...	3,365
[illegible]▲	Gen	Church	250	239	50	2,971	13,237
[illegible]	Unit of Western State Hospital, Western State Hospital, Tenn.						
St. Joseph Hospital★+▲◇	Gen	Church	280	205	60	1,604	10,973
U. S. Marine Hospital▲	Gen	USPHS	134	110	..	...	1,477
U. S. Naval Hospital▲	Gen	Navy	450	211	26	622	3,456
Veterans Admin. Hospital▲	TB	Vet	300	282	..	...	598
Veterans Admin. Hospital							
[illegible]▲	Gen	Vet	1,426	1,204	..	...	13,882
[illegible]	N&M	Indiv	50	45	..	...	502
[illegible]							
Hospital⊙	TB	State	360	313	..	...	772
Milan, 4,942—Gibson							
Milan Hospital	Gen	Corp	20	11	10	286	889
[illegible]							
[illegible]	Gen	Corp	17	2	3	48	342
[illegible]	Gen	NPAssn	35	12	11	298	966
[illegible]	Gen	Indiv	20	16	8	197	1,402
Mountain Home, 250—Washington							
Veterans Admin. Center▲	Gen	Vet	605	508	..	...	4,457
Murfreesboro, 13,027—Rutherford							
Rutherford Hospital▲	Gen	NPAssn	42	46	13	926	2,731
[illegible]▲	Ment	Vet	1,307	1,039	..	...	792
[illegible]							
[illegible]	Ment	State	2,100	2,057	..	...	453
City View Sanitarium	N&M	Part	55	32	..	...	401
Davidson County Hospital	Ment	County	850	800	..	...	417
Davidson County Tuberculosis							
Hospital▲	TB	County	300	220	..	...	556
Geo. W. Hubbard Hospital of							
Meharry Medical							
College★+▲◇	Gen	NPAssn	200	155	25	944	4,822
Hospital for the Criminal							
Insane	Unit of Central State Hospital						
Middle Tennessee							
Tuberculosis Hospital	TB	State	54	49	..	...	335
Mid State Baptist Hosp.★+▲◇	Gen	Church	115	102	18	886	5,495
Nashville General Hosp.★+▲◇	Gen	City	221	156	35	1,095	5,821
Riverside Sanitarium and							
Hospital	Gen	Church	84	29	10	132	917
St. Thomas Hospital★+▲◇	Gen	Church	235	188	35	2,142	12,110
Vanderbilt University							
Hospital★+▲◇	Gen	NPAssn	352	248	52	1,532	9,997
Veterans Admin. Hospital+▲	Gen	Vet	600	524	..	...	7,623
Oak Ridge, 30,236—Anderson							
Oak Ridge Hospital▲	Gen	NPAssn	224	110	30	838	6,717
Oakville, 163—Shelby							
Oakville Memorial							
Sanatorium+	TB	CyCo	375	255	..	...	302
Paris, 8,818—Henry							
[illegible]	Gen	Indiv	24	10	4	116	558
[illegible]	Gen	Part	25	17	7	167	1,323
[illegible]	Gen	Corp	13	6	4	105	294
Pleasant Hill, 178—Cumberland							
U[illegible]	GenTb	NPAssn	48	23	5	90	366
Pres[illegible]							
[illegible]	TB	NPAssn	40	25	..	...	4
Pulaski, [illegible]—Giles							
Pulaski Hospital	Gen	Indiv	20	13	5	318	971
[illegible]	Gen	County	44	...	10	Estab. 1950	
Rockwood, 4,265—Roane							
[illegible]	Gen	NPAssn	35	16	10	361	1,542
[illegible]	Gen	Indiv	14	8	6	208	262
[illegible]	Gen	Indiv	15	8	3	196	646
[illegible]	Gen	Indiv	30	6	6	112	474
Emerald-Hodgson Hospital	Gen	Church	57	24	12	183	1,780

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]field, 6,540—Robertson							
[illegible]ital	Gen	County	25	15	9	432	1,124
[illegible]▲	Gen	NPAssn	30	20	8	383	1,538
Waynesboro, 1,149—Wayne							
Cullen C. Woods Memorial [illegible]	Gen	Indiv	20	8	8	146	793
[illegible]▲	Ment	State	2,350	2,319	..	...	674
[illegible]	[illegible]	NPAssn	49	19	6	175	1,338
Related Institutions							
[illegible]	Ment	County	300	243	..	...	82
[illegible]	MeDe	State	795	788	..	...	43
[illegible]	Gen	County	74	27	13	538	2,008
[illegible]	Eye	Part	20	14	..	...	681
[illegible]	Inst	State	28	3	..	...	1,208
[illegible]	Inst	State	25	5	..	...	568
[illegible]	Inst	County	593	501	..	...	359
Junior League Home for Crippled Children	Orth	NPAssn	50	40	..	...	98
Tennessee State Penitentiary Hospital	Inst	State	150	10	..	...	360

TEXAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Albany, 2,255—Shackelford							
Shackelford County Memorial Hospital	Gen	County	18	...	4	Estab. 1950	
Abilene, 47,102—Taylor							
Abilene State Hospital	Epil	State	1,473	1,350	..	...	102
[illegible]▲	Gen	Church	205	152	20	992	8,896
St. Ann Hospital▲	Gen	Church	30	28	14	462	2,752
Alpine, 5,256—Brewster							
Alpine Hospital	Gen	Indiv	14	...	3	Estab. 1950	
Alvin, 3,541—Brazoria							
Alvin Memorial Hospital	Gen	Indiv	20	4	8	85	1,205
[illegible]▲	Gen	County	159	149	32	1,237	7,652
[illegible]▲	Gen	Church	158	115	30	860	7,206
[illegible]	TB	NPAssn	80	45	..	...	81
[illegible]▲	Gen	Vet	187	142	..	...	2,671
[illegible]	Gen	Indiv	16	8	5	65	312
[illegible]	Gen	NPAssn	69	32	10	243	1,664
Anahuac, 1,282—Chambers							
Chambers County Hospital	Gen	County	36	...	8	Estab. 1950	
Andrews, 3,309—Andrews							
[illegible]	Gen	County	22	10	12	120	970
[illegible]	Gen	Indiv	10	2	5	39	192
[illegible] Hospital	Gen	County	38	11	8	138	720
Atlanta, 3,770—Cass							
Brooks Clinic Hospital	Gen	Part	21	13	5	125	1,407
[illegible]	Gen	Part	24	8	6	146	622
[illegible]	Ment	State	2,069	3,320	..	...	1,227
[illegible]	TB	CyCo	48	33	..	...	80
[illegible]▲	Gen	City	237	144	35	1,627	6,900
[illegible]	Gen	Church	19	10	7	272	707
[illegible]	Gen	Church	61	44	20	702	3,332
[illegible]▲	Gen	Church	114	78	30	1,177	5,031
[illegible]	Inst	State	84	...	..	Estab. 1950	
[illegible] Air Force Hospital	Gen	USAF	50	15	..	...	670
Baird, 1,825—Callahan							
Callahan County Hospital	Gen	County	25	6	5	141	939
Ballinger, 5,293—Runnels							
Ballinger Clinic-Hospital	Gen	Part	35	16	6	244	846
Bastrop, 3,158—Bastrop							
F. A. Orgain Hospital	Gen	Part	14	6	6	167	606
Bay City, 9,418—Matagorda							
Matagorda General Hospital	Gen	County	41	23	14	365	2,500
Baytown, [illegible]							
[illegible]	Gen	Corp	30	20	10	326	1,656
[illegible]	Gen	Part	22	10	8	136	829
[illegible]▲	Gen	NPAssn	70	37	15	497	3,224
[illegible]	Gen	Church	125	84	30	617	3,287
[illegible]	Gen	City	40	35	10	280	1,851
Douglas Hospital	Gen	Indiv	16	7	4	72	208
[illegible]▲	Gen	Church	165	103	12	140	5,095
[illegible] Hospital No. 1	TB	County	130	112	..	...	141

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Jefferson County Tuberculosis Hospital No. 2	Unit of Jefferson County Tuberculosis Hospital No. 1						
Martin de Porres Negro Hosp.	Unit of Hotel Dieu Hospital						
St. Therese Hospital▲	Gen	Church	90	85	30	1,155	4,137
[illegible] Hospital	Gen	Indiv	14	4	5	96	313
[illegible]	Gen	Part	40	26	10	141	736
[illegible]	Gen	Corp	22	16	12	170	906
Bellville, 2,100—Austin							
Bellville Hospital	Gen	Part	10	8	4	167	803
Belton, 6,244—Bell							
Sewell Hospital	Gen	Part	21	10	6	309	1,013
Bertram, 700—Burnet							
[illegible] Clinic	Gen	Indiv	10	2	5	65	386
B[illegible]							
[illegible]	Gen	County	14	...	5	Estab. 1950	
[illegible]	Gen	Corp	45	30	6	342	2,287
[illegible]	Ment	State	523	490	..	...	200
[illegible]	Gen	Indiv	31	19	8	148	1,270
[illegible]▲	Gen	Part	50	41	15	265	3,201
Medical Arts Clinic-Hospital	Gen	Part	30	25	10	165	1,584
Veterans Admin. Hospital	Gen	Vet	135	...	..	Estab. 1950	
Blanco, 453—Blanco							
Hospital in the Hills	Gen	Indiv	15	4	3	80	204
Boerne, 1,792—Kendall							
Boerne Hospital	Gen	Indiv	12	6	3	76	263
Bonham, 7,043—Fannin							
S. B. Allen Memorial Hospital	Gen	NPAssn	32	7	6	99	770
Medical and Surgical Clinic-Hospital	Gen	Corp	31	17	10	261	1,274
[illegible]	Gen	County	75	43	21	873	3,450
[illegible]	Gen	Corp	27	25	8	211	1,492
[illegible]	Gen	Part	60	32	11	195	1,672
[illegible]	Gen	Indiv	18	7	7	88	568
Breckenridge, 6,605—Stephens							
Stephens County Hospital	Gen	County	22	...	7	Estab. 1951	
[illegible]	Gen	Church	25	16	4	138	815
[illegible] Hospital	Gen	Corp	32	11	9	153	741
[illegible]	Gen	Part	16	5	4	100	571
[illegible]	Gen	Part	33	22	10	320	1,633
[illegible]▲	Gen	Church	50	33	18	745	3,270
Brownwood, 20,140—Brown							
Brownwood Memorial Hosp.	Gen	NPAssn	64	27	24	458	2,602
Medical Arts Hospital	Gen	NPAssn	32	14	8	155	1,477
B[illegible]							
[illegible]	Gen	Church	25	14	9	538	1,106
Burnet, [illegible]—Burnet							
Allen Hospital	Gen	Indiv	17	9	6	111	804
Shepperd Memorial Hospital	Gen	NPAssn	40	13	6	...	1,020
Camden, 830—Polk							
Camden Hospital	Gen	Part	11	5	6	92	297
Cameron, 5,227—Milam							
[illegible]	Gen	NPAssn	50	17	8	47	881
[illegible]	Gen	Church	38	19	8	240	1,360
[illegible] Hospital	Gen	County	16	5	6	86	320
Canyon, 4,349—Randall							
Neblett Hospital	Gen	Part	20	8	6	192	1,507
Carrizo Springs, 4,343—Dimmit							
Dimmit County Memorial Hospital	Gen	County	26	7	8	108	595
Carthage, 4,751—Panola							
Panola General Hospital	Gen	County	51	...	14	Estab. 1950	
[illegible]							
[illegible]	Gen	Indiv	10	5	4	..	375
[illegible]							
Center Sanitarium	Gen	Indiv	18	6	5	238	672
Warren Hospital	Gen	Indiv	18	5	6	175	711
Childress, 7,587—Childress							
Childress General Hospital	Gen	County	50	12	12	203	910
[illegible]	Gen	NPAssn	17	...	5	Estab. 1950	
[illegible]	Gen	Indiv	22	8	5	130	978
[illegible]	Gen	County	34	10	16	246	1,038
[illegible] Hospital	Gen	County	47	29	8	532	3,071
Clifton, 1,833—Bosque							
Goodall and Witcher Clinic-Hospital	Gen	Part	25	13	6	139	828
Coleman, 6,513—Coleman							
Overall Memorial Hospital	Gen	Church	26	11	7	336	1,193
College Station, 7,898—Brazos							
[illegible]	Inst	State	150	7	..	...	925
[illegible]	Gen	Indiv	28	23	8	342	2,437
Columbus, 2,862—Colorado							
Columbus Hospital and Clinic	Gen	NPAssn	20	10	5	117	721
Commerce, 5,866—Hunt							
Allen Hospital	Gen	Indiv	10	8	4	68	586

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Allen Memorial Hospital	Inst	State	30	8	..	...	604
Leberman Clinic and Hospital	Gen	Indiv	28	16	8	131	701
Conroe, 7,313—Montgomery							
Montgomery County Hospital	Gen	County	48	34	8	437	2,015
Corpus Christi, 108,053—Nueces							
	Gen	Indiv	10	5	6	86	320
▲	Orth	NPAssn	30	11	..	..	66
	Gen	Indiv	25	16	.	3	1,030
Memorial Hospital★▲	Gen	CyCo	148	133	24	1,429	6,050
Spohn Hospital▲	Gen	Church	92	77	35	1,234	4,830
Thomas-Spann Clinic and Hospital	Gen	Part	18	10	..	2	693
U. S. Naval Air Station Infirmary	Gen	Navy	12	7		..	1,083
U. S. Naval Hospital▲	Gen	Navy	550	243	24	486	4,110
Corsicana, 19,108—Navarro							
Corsicana Hospital	Gen	NPAssn	20	9	3	35	642
Navarro Clinic Hospital	Gen	Part	20	13	8	174	977
Physicians and Surgeons Hospital	Gen	County	50	45	15	331	1,570
Cotulla, 4,425—La Salle							
Myers Hospital	Gen	Indiv	19	5	6	99	513
Crockett, 5,923—Houston							
Crockett Medical and Surgical Hospital	Gen	Part	23	15	5	162	1,153
Jim Smith Memorial Hospital	Gen	Part	24	13	5	60	712
Crosbyton, 1,878—Crosby							
Crosbyton Clinic Hospital	Gen	NPAssn	35	13	8	184	1,034
Crowell, 1,922—Foard							
Foard County Hospital	Gen	County	15	7	3	91	526
Crystal City, 7,195—Zavala							
Crystal Clinic and Hospital	Gen	Indiv	25	15	6	84	1,837
Cuero, 7,456—De Witt							
Burns Hospital	Gen	Church	30	21	6	50	1,039
Dalhart, 5,899—Dallam							
Loretto Hospital▲	Gen	Church	40	19	12	169	1,159
Dallas, 432,927—Dallas							
Baylor University Hosp.★+▲◇	Gen	Church	431	353	77	5,244	18,533
Beverly Hills Sanitarium	N&M	Corp	102	93	..	...	1,085
Bradford Memorial Hospital for Babies	Unit of Children's Medical Center						
	TB	NPAssn	25	22	..	...	84
	Gen	Indiv	6	2	.	...	166
	Unit of Children's Medical Center						
▲	Chil	NPAssn	120	97	..	...	3,059
▲	Gen	Part	23	20	..	...	1,779
East Dallas Hospital and Clinic	Gen	Corp	40	25	7	306	1,648
Gaston Hospital+▲	Gen	NPAssn	58	56	.		2,530
Green Clinic and Hospital	Gen	Indiv	8		4	Estab. 1950	
Dr. Guy A. Tittle Children's Hospital	Chil	Indiv	7	3	..	...	2
Maxfield X-Ray and Radium Clinic-Hospital	Cancer	Part	16	8	..	...	522
▲	Gen	Corp	83	79	.	..	4,207
▲	Gen	Church	208	184	42	2,604	11,350
	Unit of Baylor University Hospital						
	Gen	Part	16	8	..	.	461
Parkland Hospital★+▲◇	Gen	CyCo	357	285	59	1,823	8,890
	Gen	Indiv	18	7	5	102	701
▲	Gen	Church	310	263	40	3,917	13,525
Texas Scottish Rite Hospital for Crippled Children+▲	Orth	NPAssn	70	57	..	...	619
Timberlawn Sanitarium+	N&M	Corp	86	70	..	...	518
Veterans Admin. Hospital+▲	Gen	Vet	355	293	..	...	4,035
Woodlawn Tuberculosis Hosp.+	TB	CyCo	100	94	..	...	130
Dayton, 1,815—Liberty							
	Gen	Part	24	16	7	170	1,162
	Gen	Indiv	25	11	7	107	736
Rogers Hospital	Gen	Indiv	25	18	8	75	1,782
Del Rio, 14,191—Val Verde							
Del Rio Hospital	Gen	Indiv	18	13	6	195	1,032
Medical and Surgical Clinic and Hospital	Gen	Indiv	15	10	3	54	835
Nightingale Memorial Hosp.	Gen	Indiv	24	12	6	52	1,198
Denison, 17,444—Grayson							
Madonna Hospital▲	Gen	Church	50	36	10	453	2,623
Denton, 21,345—Denton							
Denton Hospital and Clinic	Gen	Indiv	35	25	9	402	1,824
Flow Memorial Hospital	Gen	CyCo	60	...	13	Estab. 1950	
Denver City, 1,858—Yoakum							
Yoakum County Hospital	Gen	County	11	5	4	65	385
Deport, 822—Lamar							
Stephen H. Grant Hospital	Gen	Corp	10	4	4	132	357
Dilley, 1,798—Frio							
Dilley Clinic Hospital	Gen	Part	13	...	4	Estab. 1950	
Dimmitt, 1,441—Castro							
	Gen	NPAssn	25	7	7	89	656
	Gen	Corp	15	7	5	115	656
Dumas, 6,105—Moore							
Memorial Hospital	Gen	County	39	20	12	413	1,909
Eagle Lake, 2,775—Colorado							
Laughlin Hospital	Gen	Indiv	14	9	4	71	483
Eagle Pass, 7,247—Maverick							
Maverick County Memorial Hospital	Gen	County	30	10	10	160	836
East Bernard, 600—Wharton							
Albert Schuhmann Hospital	Gen	Indiv	12	5	4	130	486
Eden, 1,978—Concho							
Grafa Clinic and Hospital	Gen	Indiv	10	5	3	...	347

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Edinburg, 12,340—Hidalgo							
Grandview Hospital	Gen	CyCo	52	34	12	525	2,239
El Campo, 6,216—Wharton							
Nightingale Hospital	Gen	County	55	36	12	497	1,935
Electra, 4,934—Wichita							
Electra Hospital	Gen	Indiv	23	10	6	124	769
El Paso, 130,003—El Paso							
El Paso General Hospital★▲	Gen	CyCo	200	142	20	527	3,962
▲	Gen	Church	155	122	51	2,256	6,953
Hospital	Mat	Church	20	12	16	557	862
Providence Memorial Hosp.▲	Gen	NPAssn	40	30	..	...	1,589
St. Joseph Maternity Hosp.+	Unit of Hotel Dieu, Sisters' Hospital						
St. Joseph's Sanatorium	TB	Church	75	35	..	...	154
Southwestern General Hosp.▲	Gen	Corp	150	124	48	1,257	6,550
William Beaumont Army Hospital★▲	Gen	Army	1,500	661	34	1,166	10,769
Ennis, 7,817—Ellis							
	Gen	City	28	14	8	350	1,060
	Gen	Indiv	20	9	6	197	703
Freestone County Co-Operative Hospital	Gen	NPAssn	16	6	6	81	602
Falfurrias, 6,697—Brooks							
	Gen	Corp	22	...	12	...	...
	Gen	Indiv	10	...	8	...	...
	Gen	Indiv	8	2	3	55	195
	Gen	NPAssn	17	4	6	50	670
	Gen	Indiv	10	4	3	46	413
F							
	Gen	Army	400	171	23	814	5,486
F							
	Gen	Indiv	20	12	8	120	1,873
	Gen	County	25	...	8	Estab. 1950	
Fc							
▲	Gen	Church	110	104	25	1,487	6,239
▲	Gen	CyCo	168	145	20	1,183	5,291
W. I. Cook Memorial Hospital	Gen	NPAssn	37	31	..	...	1,204
Dorsey Hospital	Gen	Indiv	21	6	6	41	397
	Chil	NPAssn	33	15	4	...	423
▲	Gen	Church	308	265	78	3,046	14,111
	Gen	Indiv	68	55	10	448	4,268
▲	Gen	Church	311	199	52	1,934	11,058
▲	Gen	USAF	116	68	16	344	1,873
U. S. Public Health Service Hospital+▲⊙	MentDrug	USPHS	1,000	912	..	...	1,740
Fredericksburg, 3,847—Gillespie							
Fredericksburg Hospital and Clinic	Gen	Corp	25	6	8	165	922
Keidel Memorial Hospital	Gen	Indiv	16	8	5	165	642
Freeport, 6,008—Brazoria							
Dow Hospital	Gen	NPAssn	54	37	12	325	3,825
Freeport Hospital	Gen	NPAssn	25	10	6	175	1,439
Friona, 1,196—Parmer							
Parmer County Community Hospital	Gen	NPAssn	20	10	5	90	740
	Gen	Corp	42	20	10	268	1,792
	Gen	Indiv	46	22	8	223	1,342
Deaton Hospital	Gen	Indiv	18	8	7	271	1,031
Galveston, 65,898—Galveston							
Galveston State Psychopathic Hospital+	Unit of University of Texas Medical Branch Hospitals						
Hospital for Crippled and Deformed Children	Unit of University of Texas Medical Branch Hospitals						
John Sealy Hospital	Unit of University of Texas Medical Branch Hospitals						
Negro Hospital	Unit of University of Texas Medical Branch Hospitals						
St. Mary's Infirmary+▲◇	Gen	Church	225	198	24	1,355	8,031
U. S. Marine Hospital★▲	Gen	USPHS	207	138	..	...	2,652
University of Texas Medical Branch Hospitals★+▲◇	GenMent	State	662	575	26	663	10,576
Ganado, 1,253—Jackson							
Mauritz Memorial-Jackson County Hospital	Gen	County	28	...	8	Estab. 1950	
Gatesville, 3,848—Coryell							
Coryell Memorial Hospital	Gen	County	34	14	8	281	1,019
Georgetown, 4,943—Williamson							
Georgetown Hospital and Clinic	Gen	NPAssn	25	15	6	125	1,019
	Gen	NPAssn	24	9	8	128	894
Gilmer, 4,114—Upshur							
	Gen.	Indiv	15	4	5	60	500
	Gen	Part	30	13	10	333	1,431
	Gen	City	34	...	6	Estab. 1950	
	Gen	Indiv	24	20	6	100	1,387
Hanna Hospital	Gen	Indiv	8	5	2	20	215
Goliad, 1,580—Goliad							
Goliad County Hospital	Gen	County	16	...	6	Estab. 1950	
▲	Orth	NPAssn	116	91	..	...	159
	Gen	Corp	22	8	6	89	469
Gorman, 1,313—Eastland							
Blackwell Sanitarium and Clinic	Gen	Part	50	33	8	318	2,452

Key to symbols and abbreviations is on page 124

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Graham, 6,756—Young							
Graham Hospital	Gen	NPAssn	25	13	6	253	1,019
[illegible]	Gen	Corp	21	10	4	145	1,210
[illegible]	Gen	Indiv	27	12	8	68	1,451
[illegible]	Gen	Part	17	10	7	262	860
[illegible]	Gen	Indiv	46	17	12	151	1,276
[illegible]	ENT	Part	12	...	..	Estab. 1950	
Groesbeck, 2,109—Limestone							
Dr. Cox's Hospital	Gen	Indiv	18	10	5	51	600
Hale Center, 1,626—Hale							
Hale County Cooperative Hospital	Gen	NPAssn	17	6	7	80	553
Hallettsville, 2,001—Lavaca							
[illegible] Hospital	Gen	Indiv	30	13	8	147	930
[illegible]	Gen	Corp	50	30	10	49	620
Hamlin, 2,561—Jones							
[illegible]	Gen	Part	30	15	6	121	1,124
[illegible]▲	Gen	Church	135	61	20	585	4,537
Hearne, 4,[illegible]—Robertson							
Hearne Clinic-Hospital	Gen	Part	19	7	7	50	500
Henderson, 6,802—Rusk							
[illegible]	Gen	NPAssn	50	27	12	316	2,211
[illegible]	Gen	County	23	12	6	87	767
Deaf Smith County Hospital	Gen	County	40	29	12	213	2,265
Hillsboro, 8,[illegible]—Hill							
[illegible]	Gen	Corp	25	16	6	188	866
M. D. Anderson Hospital for Cancer Research†▲	Cancer	State	82	65	..	...	1,302
Autry Memorial Hospital-School	Unit of Houston Tuberculosis Hospital						
Heights Hospital▲	Gen	Corp	70	54	20	900	4,377
[illegible]	Gen	NPAssn	625	381	75	3,548	17,897
[illegible]	ENT	NPAssn	23	12	..	...	1,785
[illegible]	Gen	NPAssn	50	25	10	321	1,284
[illegible]	TB	CyCo	193	171	..	...	157
[illegible]▲	Gen	CyCo	441	386	52	2,973	13,446
[illegible]▲	Gen	Church	311	249	43	1,939	14,006
[illegible]▲	Gen	Church	125	82	22	694	6,837
[illegible]	N&M	Part	35	12	..	...	365
[illegible]	Gen	Part	35	15	6	247	1,214
[illegible]	Gen	Church	51	43	20	570	2,630
[illegible]▲	Gen	Church	434	3[illegible]3	110	5,753	21,810
[illegible]▲	Indus	NPAssn	133	103	..	...	2,572
[illegible]	Urol	Indiv	20	13	..	...	587
Veterans Admin. [illegible]▲	Gen	Vet	746	630	..	...	6,086
[illegible]▲	Gen	Indiv	33	20	6	115	869
[illegible]	Gen	NPAssn	50	14	15	378	1,131
Jacksboro Hospital	Gen	Part	15	11	6	79	976
[illegible]▲	Gen	NPAssn	121	88	20	309	4,737
[illegible]	Gen	Part	32	20	6	150	1,300
[illegible]	Gen	Part	31	18	10	205	744
[illegible]	Gen	Indiv	19	6	2	25	304
[illegible]	Gen	Part	10	4	5	105	356
[illegible]	Gen	NPAssn	24	5	9	78	410
[illegible]	Gen	Indiv	20	9	6	108	547
[illegible] Hospital	Gen	County	41	12	11	315	1,724
Kerrville, 7,665—Kerr							
Sid Peterson Memorial Hospital	Gen	NPAssn	57	22	11	230	1,512
Sunnyside S[illegible]	*TB*	*Indiv*	*21*	*7*	..	...	*27*
[illegible]	Gen	NPAssn	26	20	7	359	1,581
[illegible]	Gen	Corp	6	5	..	...	425
[illegible] Hospital	Gen	County	56	34	15	618	2,451
Knox City, 1,488—Knox							
Knox County Hospital	Gen	County	38	26	8	287	2,331
La Grange, 2,729—Fayette							
[illegible]	Gen	Corp	40	24	9	209	1,074
[illegible]	Gen	Part	45	35	8	350	2,304
Lampasas, 4,872—Lampasas							
Rollins-Brook Hospital and Clinic	Gen	Part	23	12	5	183	1,255
Laredo, 51,694—Webb							
Mercy Hospital▲	Gen	Church	76	48	29	1,017	3,614
La Tuna, 200—El Paso							
Federal Correctional Institution	Inst	USPHS	35	9	..	...	406
Legion, 200—Kerr							
Veterans Admin. [illegible]▲	TB	Vet	695	360	..	...	980
[illegible] Hospital	Gen	Part	16	...	5	Estab. 1950	
Phillips-Dupre Hospital	Gen	Part	28	19	8	326	1,941
Liberty, 4,161—Liberty							
Mercy Hospital	Gen	Church	55	17	12	206	1,708

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Yettie Kersting Memorial Hospital	Gen	County	20	14	2	93	1,218
Littlefield, 6,558—Lamb							
Payne-Shotwell Hospital	Gen	Part	40	22	10	111	1,603
[illegible]	Gen	Indiv	16	8	3	123	637
Lockney, 1,0[illegible]—Floyd							
Floyd County Co-Operative Hospital	Gen	NPAssn	12	5	4	78	461
[illegible]	Gen	County	42	35	6	553	2,078
[illegible] Throat Hospital	ENT	NPAssn	25	5	..	...	570
Markham Hospital	Gen	NPAssn	32	16	10	360	1,219
Medical and Surgical Clinic-Hospital	Gen	Part	10	2	4	...	715
Loraine, 1,041—Mitchell							
Johnson Hospital	Gen	Part	10	5	4	210	275
Lubbock, 71,390—Lubbock							
Chatham Hospital-Clinic	Gen	Indiv	16	4	8	58	300
Lubbock Memorial Hospital▲◇	Gen	NPAssn	120	92	20	923	6,873
St. Mary of the Plains Hosp.▲	Gen	Church	53	33	12	285	3,046
[illegible]	Gen	Indiv	14	..	6	Estab. 1950	
[illegible]▲	Gen	Corp	75	57	24	1,017	5,215
L[illegible]							
[illegible]	Gen	County	56	38	12	418	2,730
[illegible]▲	Gen	NPAssn	102	35	20	354	2,822
Luling, 4,285—Caldwell							
Luling Hospital	Gen	Part	20	9	7	120	731
[illegible]	Gen	County	21	...	4	Estab. 1950	
[illegible]	Gen	Indiv	45	22	5	90	950
[illegible]▲	Gen	Corp	75	45	10	153	2,643
Veterans Admin. Hospital	Gen	Vet	200	...	..	Estab. 1950	
Marshall, 22,255—Harrison							
Kahn Memorial Hospital	Gen	NPAssn	75	31	20	559	2,430
Texas and Pacific Railway Employees Hospital	Indus	NPAssn	105	54	..	...	2,632
Mason, 2,448—Mason							
Mason Memorial Hospital	Gen	NPAssn	10	4	4	45	354
Matador, 1,325—Motley							
Traweek Hospital	Gen	Indiv	16	7	4	82	672
McAllen, 20,005—Hidalgo							
[illegible]	Gen	City	47	43	18	701	2,633
[illegible]	Gen	CyCo	84	54	14	364	3,002
[illegible]▲	Gen	Vet	619	548	..	...	6.113
[illegible]	Gen	NPAssn	10	4	5	105	300
[illegible]	Gen	Indiv	19	9	5	122	1,090
[illegible]	Gen	Part	20	10	6	124	1,231
[illegible]	Gen	Indiv	11	...	4	Estab. 1950	
[illegible]	Gen	NPAssn	19	12	6	258	889
Meridian, 1,14[illegible]—Bosque							
Holt Hospital and Clinic	Gen	Indiv	22	9	4	103	1,016
Merkel, 2,314—Taylor							
Sadler Clinic-Hospital	Gen	Indiv	20	13	7	104	1,097
Mexia, 6,618—Limestone							
Brown Hospital	Gen	Part	20	12	5	138	820
Midland, 21,756—Midland							
Midland Memorial [illegible]	Gen	NPAssn	75	...	16	Estab. 1950	
Mi[illegible]							
[illegible]▲	Gen	Church	30	22	10	221	1,418
Mi[illegible]							
Weaver H. Baker Memorial Tuberculosis Sanatorium	TB	State	518	300	..	...	609
Monahans, 6,260—Ward							
Bell Clinic-Hospital	Gen	Indiv	20	6	3	52	500
[illegible]	Gen	Corp	25	...	6	...	...
Mo[illegible]							
[illegible]	Gen	Part	10	5	3	66	498
Mo[illegible]							
Franklin County Hospital	Gen	County	20	6	4	44	670
Muleshoe, 2,448—Bailey							
Green Hospital and Clinic	Gen	Part	18	6	6	153	645
Nacogdoches, 12,303—Nacogdoches							
City Memorial Hospital	Gen	City	62	51	13	563	4,027
Naples, 1,332—Morris							
David Granberry Memorial Hospital	Gen	Corp	28	8	10	125	591
Navasota, 4,976—Grimes							
Brazos Valley Sanitarium	Gen	NPAssn	30	14	9	256	1,271
N[illegible]							
[illegible]	Gen	NPAssn	50	23	7	45	1,095
[illegible]	Gen	Part	22	13	5	198	893
Ne[illegible] Gulf, [illegible]—Wharton							
Texas Gulf Sulphur Company Hospital	Gen	NPAssn	20	5	5	69	516
Newton, 1,400—Newton							
Newton County Memorial Hospital	Gen	County	23	12	6	110	822
Nocona, 3,001—Montague							
Major Clinic Hospital	Gen	Corp	16	13	4	100	841
Odessa, 29,432—Ector							
Ector County Hospital	Gen	County	100	66	35	1,144	3,038
Olney, 3,753—Young							
Hamilton Hospital	Gen	City	38	26	9	221	2,235
Orange, 21,100—Orange							
Orange City Hospital	Gen	City	86	51	22	607	4,198
Overton, 2,002—Rusk							
Overton Memorial Hospital	Gen	City	22	8	6	155	981

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Rocky Mount Hospital	Ven	State	165	109	..	...	4,633
Ozona, 2,877—Crockett							
Ozona Hospital	Gen	Indiv	15	...	4	Estab. 1950	
Paducah, 2,940—Cottle							
W. Q. Richards Memorial Hospital	Gen	County	25	8	8	168	728
Palacios, 2,913—Matagorda							
Bay View General Hospital	Gen	Indiv	28	16	6	79	654
Palestine, 12,455—Anderson							
Hunter-Hunter and Kay Clinic Hospital	Gen	Part	7	3	4	203	505
Palestine Sanitarium	Gen	Corp	28	14	8	228	956
Pampa, 16,522—Gray							
Highland General Hospital	Gen	County	110	...	24	Estab. 1950	
Paris, 21,636—Lamar							
[illegible]	Unit of Sanitarium of Paris						
[illegible]	Gen	County	43	22	7	146	973
St. Joseph's Hospital	Gen	Church	70	55	14	511	3,071
Sanitarium of Paris	Gen	NPAssn	92	61	12	164	2,539
Pasadena, 22,444—Harris							
Medical and Surgical Hospital	Gen	Indiv	22	15	7	312	1,482
Pasadena General Hospital	Gen	Corp	49	39	10	478	2,454
Pecos, 8,054—Reeves							
Camp and Camp Hospital	Gen	Indiv	18	8	8	266	630
Perryton, 4,399—Ochiltree							
Perryton Hospital	Gen	Indiv	18	11	6	210	1,222
[illegible]	Gen	Part	35	10	8	164	1,032
[illegible]							
Phillips Medical Center	Indus	NPAssn	12	1	..	...	409
Pittsburg, 3,157—Camp							
Pittsburg Medical and Surgical Hospital	Gen	NPAssn	29	16	10	293	1,235
Plainview, 14,023—Hale							
Plainview Hospital and Clinic▲	Gen	NPAssn	157	60	12	465	3,522
Pleasanton, 2,903—Atascosa							
Ogden Hospital	Gen	Indiv	10	4	3	114	389
Port Arthur, 57,377—Jefferson							
St. Mary's Hospital▲◇	Gen	Church	150	100	35	1,875	7,574
Port Lavaca, 5,062—Calhoun							
Calhoun County Memorial Hospital	Gen	County	20	..	6	Estab. 1950	
Poteet, 2,487—Atascosa							
[illegible]	Gen	Indiv	13	6	4	103	590
Pr [illegible]—Waller							
[illegible] Hospital◇	Gen	State	52	8	4	14	633
Quanah, 4,594—Hardeman							
Memorial Hospital	Gen	County	57	23	8	242	2,040
Randolph Field,—Bexar							
U. S. Air Force Hospital	Gen	USAF	75	40	..	.	2,084
Ranger, 3,951—Eastland							
Ranger General Hospital	Gen	CyCo	35	21	7	229	992
West Texas Hospital	Gen	Corp	18	11	4	71	539
Raymondville, 9,135—Willacy							
Raymondville Memorial Hosp.	Gen	NPAssn	21	16	6	312	1,409
Refugio, 4,680—Refugio							
Refugio County Hospital	Gen	Church	34	21	8	200	1,092
Richmond, 2,045—Fort Bend							
Polly Ryon Memorial Hospital	Gen	NPAssn	50	16	9	265	1,353
Rising Star, 1,282—Eastland							
Rising Star Hospital	Gen	Indiv	25	8	5	78	860
Robert Lee, 1,070—Coke							
Coke County Memorial Hospital	Gen	County	13	...	4	Estab. 1950	
Robstown, 7,248—Nueces							
Robstown Hospital	Gen	NPAssn	16	10	7	148	1,193
Roby, 1,040—Fisher							
Fisher County Memorial Hospital	Gen	NPAssn	19	8	4	79	732
Rockdale, 2,311—Milam							
Richards Clinic and Hospital	Gen	Indiv	8	2	4	..	89
Rockport, 2,217—Aransas							
Rockport Hospital-Clinic	Gen	Indiv	6	1	4	50	163
Rocksprings, 1,433—Edwards							
Edwards County Memorial Hospital	Gen	County	10	2	4	26	210
Roscoe, 1,581—Nolan							
Young Hospital	Gen	Part	25	14	7	138	1,235
Rotan, 3,159—Fisher							
Callan Hospital	Gen	Part	50	19	10	235	2,302
Rusk, 6,617—Cherokee							
Rusk Memorial Hospital	Gen	City	32	10	8	106	750
Rusk State Hospital	Ment	State	1,761	2,529	..	...	788
[illegible]							
[illegible]	Gen	Part	56	39	18	595	2,849
St. John's Hospital▲	Gen	Church	40	28	10	202	1,813
Shannon West Texas Memorial Hospital▲◇	Gen	NPAssn	153	128	18	694	6,153
U. S. Air Force Hospital	Gen	USAF	50	19	8	201	1,621
San Antonio, 406,811—Bexar							
Baptist Memorial Hosp.★+▲◇	Gen	Church	235	188	48	2,728	12,469
Brooke Army Hospital★+▲	Gen	Army	2,400	1,794	85	2,418	21,417
Central Clinic Hospital	*Gen*	*Indiv*	*7*	*5*	*4*	*23*	*264*
Good Samaritan Hospital	Gen	Indiv	49	10	9	152	634
[illegible]	TB	Church	52	45	..	...	132
[illegible]	Gen	Corp	28	18	5	22	1,696
[illegible]	Ven	State	300	159	10	1	5,657
Nix Memorial Hospital★▲	Gen	Corp	159	135	40	1,708	7,697
Robert B. Green Memorial Hospital★▲	Gen	CyCo	170	146	26	1,346	3,672
Saenz Clinic and Hospital	Gen	Indiv	12	5	6	303	658
San Antonio State Hospital⊙	Ment	State	2,060	3,013	..	...	1,100
Santa Rosa Hospital★+▲◇	Gen	Church	325	290	50	2,754	13,377

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
U. S. Air Force Hospital▲	Gen	USAF	525	217	20	...	7,555
Woodmen of the World Memorial Hospital▲	TB	NPAssn	150	77	..	...	103
Sanatorium, 1,475—Tom Green							
McKnight State Sanatorium▲	TB	State	752	724	..	...	1,030
[illegible]tine							
[illegible]	Gen	City	24	5	6	54	305
[illegible]	Gen	NPAssn	42	25	12	360	1,723
San Marcos, 9,961—Hays							
[illegible]	Gen	NPAssn	33	12	11	160	793
[illegible]							
[illegible]	Gen	County	20	...	5	Estab. 1950	
[illegible]							
	Gen	Part	15	6	4	43	598
Sealy Hospital	Gen	Indiv	16	9	5	92	603
Seguin, 9,696—Guadalupe							
Seguin Hospital	Gen	Part	22	13	12	326	1,030
Seminole, 3,480—Gaines							
Seminole General Hospital-Clinic	Gen	Indiv	26	5	6	100	1,825
Seymour, 3,778—Baylor							
Baylor County Hospital	Gen	County	50	15	10	154	1,165
Sherman, 20,073—Grayson							
St. Vincent's Hospital▲	*Gen*	*Church*	*76*	*65*	*15*	*407*	*3,010*
Wilson N. Jones Hospital▲	Gen	NPAssn	72	63	12	394	3,739
Shiner, 1,775—Lavaca							
Dr. Wagner's Hospital	Gen	Indiv	28	16	11	134	837
Sinton, 4,270—San Patricio							
Sinton Hospital	Gen	Part	23	13	8	220	1,321
Slaton, 5,040—Lubbock							
Mercy Hospital	Gen	Church	40	16	10	290	1,315
Snyder, 12,012—Scurry							
Snyder Hospital Clinic	Gen	Indiv	51	...	10	Estab. 1950	
Southton,—Bexar							
Southton Sanatorium	TB	CyCo	150	64	..	...	103
Spearman, 1,850—Hansford							
Hansford Hospital	Gen	NPAssn	16	5	4	27	290
Spur, 2,173—Dickens							
Nichols General Hospital	Gen	Indiv	20	10	7	80	620
Stamford, 5,806—Jones							
Stamford Sanitarium	Gen	Part	50	37	15	290	2,591
Stanton, 1,594—Martin							
Memorial Hospital	Gen	NPAssn	27	3	8	137	347
Stephenville, 7,065—Erath							
Stephenville Hospital and Clinic	Gen	Part	50	30	8	197	2,097
Sugar Land, 2,400—Fort Bend							
Laura Eldridge Hospital	Gen	NPAssn	30	15	7	249	1,692
[illegible]							
[illegible] Hospital	Gen	County	44	29	8	225	2,238
Sweetwater, 13,580—Nolan							
Sweetwater Municipal Hosp.	Gen	City	60	53	10	267	3,0
Tahoka, 2,831—Lynn							
Tahoka Hospital and Clinic	Gen	Indiv	15	5	4	190	7
T[illegible]							
[illegible]	Gen	Indiv	13	5	5	227	53
[illegible]	Gen	Indiv	40	28	6	220	1,38
Stromberg Clinic and Hosp.	Gen	Corp	39	26	8	85	1,07
Swanson Clinic and Hospital	Gen	Corp	26	7	7	45	40
Temple, 24,970—Bell							
Gulf, Colorado and Santa Fe Hospital▲	Indus	NPAssn	135	71	..	...	3,74
Kings Daughters Hospital★▲	Gen	NPAssn	110	54	16	375	3,02
Scott and White Hospital★+▲◇	Gen	NPAssn	236	163	16	304	7,32
Veterans Admin. Center+▲	Gen	Vet	761	658	..	...	3,61
Terrell, 11,553—Kaufman							
Alexander Hospital	Gen	Indiv	26	16	6	90	83
Friddell Hospital	Gen	Indiv	24	5	4	66	43
Holton-Johnson Clinic Hosp.	Gen	Part	16	13	7	154	69
Lane Clinic-Hospital	Gen	Indiv	10	2	3	23	9
Terrell State Hospital	Ment	State	2,163	2,070	..	...	41
Texarkana, 24,657—Bowie							
Texarkana Hospital▲	Gen	NPAssn	50	40	8	430	2,71
Texas City, 16,577—Galveston							
Danforth Memorial Hospital	Gen	Part	31	16	14	375	1,37
Three Rivers, 2,014—Live Oak							
Gipson Hospital	Gen	Indiv	12	5	4	23	45
Tomball, 1,057—Harris							
Tomball Hospital	Gen	NPAssn	24	...	4	Estab. 195	
Trinity, 2,039—Trinity							
Trinity Memorial Hospital	Gen	NPAssn	16	4	8	49	311
Tyler, 38,864—Smith							
East Texas Tuberculosis [illegible]	TB	State	376	84	..	...	47
[illegible]	Gen	Indiv	7	1	2	14	69
[illegible] Hospital	Gen	Part	14	13	8	287	1,16
[illegible]	Gen	Church	111	76	22	843	5,59
[illegible]	Gen	County	40	20	14	375	1,60
[illegible]	Gen	Church	27	14	4	174	1,221
[illegible]	Gen	Indiv	18	9	4	32	513
Vernon Hospital	Gen	Part	38	21	8	310	1,82
Victoria, 16,102—Victoria							
DeTar Memorial Hospital	Gen	Indiv	38	23	10	316	2,194
Victoria Hospital	Gen	Indiv	29	16	13	254	1,473
Waco, 84,300—McLennan							
Crippled Children's Hospital	Unit of Providence Hospital						
Hillcrest Memorial Hosp.▲◇	Gen	Church	123	112	27	1,376	8,191
Providence Hospital▲◇	Gen	Church	160	119	25	966	9,963
Veterans Admin. Hospital+▲	Ment	Vet	2,040	1,911	..	...	1,632

Key to symbols and abbreviations is on page 124

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Waxahachie, 11,196—Ellis							
Waxahachie Sanitarium▲	Gen	NPAssn	47	30	9	416	1,809
Weatherford, 8,053—Parker							
Medical and Surgical Clinic-Hospital	Gen	Part	16	12	9	203	848
Parker County Hospital	Gen	County	40	16	7	779	953
Weimar, 1,665—Colorado							
	Gen	Part	16	10	5	190	836
▲	Gen	Church	25	15	6	198	1,233
Weslaco, 7,487—Hidalgo							
McCalip-Ivy Hospital	Gen	Part	36	16	9	130	1,147
Wharton, 4,456—Wharton							
Caney Valley Hospital	Gen	Part	40	21	12	400	1,612
Rugeley and Blasingame Clinic-Hospital	Gen	Corp	32	24	6	116	1,882
Wheeler, 818—Wheeler							
	Gen	Part	24	6	6	147	672
	Gen	NPAssn	8	4	4	42	378
▲	Gen	Church	75	58	16	664	3,591
▲	Gen	Part	102	92	15	389	5,360
	Ment	State	2,482	2,504	.	...	997
▲	Gen	CyCo	115	85	28	834	5,714
	Gen	Indiv	12	6	3	84	346
Winters, 2,671—Runnels							
	Gen	City	17	8	4	115	868
Hospital	Gen	NPAssn	32	...	4	Estab. 1950	
Woodville, 1,863—Tyler							
Tyler County Memorial Hospital	Gen	Church	23	...	5	Estab. 1950	
Yoakum, 5,225—Lavaca							
Huth Memorial Hospital	Gen	Church	30	24	10	170	1,994

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Arlington, 7,686—Tarrant							
	Inst	NPAssn	28	23	..	...	147
	ENT	Indiv	10	3	..	...	758
Austin, 131,964—Travis							
Austin State School	MeDe	State	2,001	2,325	..	...	229
Beaumont, 93,715—Jefferson							
Palms Hospital	N&M	Indiv	39	34	..	...	139
Bronte, 1,013—Coke							
Karen-Gayl Hospital	Gen	Indiv	8	7	3	39	684
Buda, 400—Hays							
Buda Clinic and Hospital	Gen	Indiv	6	2	4	95	132
Commerce, 5,866—Hunt							
Seyler Clinic and Hospital	Gen	Indiv	12	1	4	61	125
Cooper, 2,349—Delta							
Janes Hospital	Gen	Part	10	5	6	161	501
Crane, 2,156—Crane							
Crane County Memorial Hosp.	Gen	County	17	7	4	82	616
Dallas, 432,927—Dallas							
Elm Rest Hospital	Conv	Part	40	37	..	...	31
Health Center of Southern	Inst	Church	35	4	..	...	1,314
	ENT	Part	4	2	..	...	98
	ENT	Indiv	5	5	..	...	469
	ENT	Indiv	5	3	..	...	280
Mesa Sanatorium	TB	Indiv	22	17	..	...	52
Fort Worth, 277,047—Tarrant							
	TB	CyCo	76	68	..	...	81
	Gen	Indiv	40	24	6	54	1,251
	N&M	Indiv	22	13	..	...	193
	Mat	NPAssn	34	24	1	94	108
Hallettsville, 2,001—Lavaca							
Dufner Hospital	Gen	Indiv	10	8	5	35	180
Harlingen, 23,202—Cameron							
Medical Arts Hospital	Gen	Corp	10	6	6	182	532
Hearne, 4,778—Robertson							
Searcy-Fleming Clinic and Hospital	Gen	Part	6	...	4	Estab. 1950	
	Gen	Corp	15	11	2	84	937
Clinic	PhyMed	NPAssn	50	35	..	...	255
Oak Place Sanitarium	N&M	Indiv	40	9	..	...	324
	Conv	Corp	20	13	..	...	13
	Inst	State	140	114	..	...	1,192
Hutchins, 400—Dallas							
City-County Convalescent Hospital	Conv	CyCo	130	81	..	...	94
	Conv	Indiv	12	5	..	...	27
Kaufman, 2,715—Kaufman							
Shaw Clinic and Hospital	Gen	Indiv	6	2	3	36	146
Kerrville, 7,665—Kerr							
J. S. Holland Rest Home	TB	Indiv	10	9	..	...	25
Lamesa, 10,706—Dawson							
Standifer Hospital	Gen	Indiv	4	1	4	85	195
Livingston, 2,855—Polk							
Corso Obstetrical Hospital	Mat	Indiv	6	2	4	80	139

TEXAS—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Longview, 24,445—Gregg							
Camp Normal Industrial Hospital	Gen	Indiv	8	2	4	90	185
	Gen	Indiv	18	3	2	9	147
	Gen	Indiv	20	10	6	151	851
	Gen	Indiv	9	3	6	55	401
	Gen	Indiv	10	2	4	59	149
McGee Hospital	Gen	Indiv	12	3	5	84	353
Pearsall, 4,461—Frio							
Howard Hospital	Gen	Indiv	8	3	3	41	210
Pharr, 8,678—Hidalgo							
Valley Convalescent Center	Conv	Indiv	18	12	..	...	510
Ralls, 1,771—Crosby							
L. W. Spikes Hospital	Gen	Indiv	8	3	2	93	230
San Antonio, 406,811—Bexar							
General Clinic-Hospital	Gen	Indiv	11	3	4	51	60
	Conv	Indiv	50	35	..	..	200
	Conv	Church	24	...	..	Estab. 1950	
and Hospital	Mat	Church	35	18	12	58	77
	Gen	Indiv	10	5	5	48	291
	Gen	Indiv	13	4	6	241	300
Teague, 2,908—Freestone							
City Hospital	Gen	Indiv	15	7	6	104	488
Tulia, 3,167—Swisher							
Swisher County Hospital	Gen	County	25	8	7	141	1,165
Wichita Falls, 67,709—Wichita							
Adams and Adams Eye, Ear, Nose and Throat Clinic Hospital	ENT	Part	7	1	..	...	602

UTAH

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Brigham, 6,777—Box Elder							
Cooley Memorial Hospital	Gen	Indiv	35	15	20	426	1,006
Cedar City, 6,172—Iron							
Iron County Hospital	Gen	County	45	30	18	460	1,430
Dragerton, 4,702—Carbon							
Dragerton Hospital	Gen	Indiv	19	...	6	...	...
Fillmore, 1,877—Millard							
Fillmore Latter-Day Saints Hospital	Gen	Church	25	6	14	121	299
Fort Duchesne, 104—Uintah							
Uintah and Ouray Agency Indian Hospital	Gen	IA	24	9	6	72	495
Heber, 2,929—Wasatch							
Heber Hospital	Gen	Part	16	9	10	...	628
Lehi, 3,636—Utah							
Lehi City Hospital	Gen	City	15	7	8	137	527
Logan, 16,802—Cache							
Latter-Day Saints Hospital▲	Gen	Church	100	56	35	1,158	3,977
Milford, 1,675—Beaver							
Beaver County Hospital	Gen	Indiv	15	8	6	70	360
Moab, 1,084—Grand							
Grand County Public Hospital	Gen	County	16	8	5	42	299
Mount Pleasant, 2,029—Sanpete							
Sanpete Latter-Day Saints Hospital	Gen	Church	28	10	13	217	455
▲	Gen	Church	170	108	32	975	5,502
Thomas D. Dee Memorial Hospital★+▲◇	Gen	Church	283	147	70	2,265	8,571
Utah State Tuberculosis Sanatorium▲⊙	TB	State	100	80	..	...	139
Park City, 2,249—Summit							
Park City Miners' Hospital.	Gen	NPAssn	18	6	5	49	291
Payson, 3,979—Utah							
Payson City Hospital	Gen	NPAssn	35	24	22	520	1,433
Provo, 28,899—Utah							
Utah State Hospital	Ment	State	1,313	1,249	..	...	494
Utah Valley Hospital▲	Gen	NPAssn	72	51	28	1,400	3,812
Richfield, 4,209—Sevier							
Sevier Valley Hospital	Gen	Indiv	27	13	10	320	988
St. George, 4,545—Washington							
D. A. McGregor Hospital	Gen	NPAssn	20	8	8	299	536
Salina, 1,786—Sevier							
Salina Hospital	Gen	City	16	8	6	176	516
Salt Lake City, 181,718—Salt Lake							
Dr. W. H. Groves Latter-Day Saints Hospital★+▲◇	Gen	Church	359	302	90	4,108	15,891
Holy Cross Hospital★+▲◇	Gen	Church	181	140	50	2,174	8,047
Primary Children's Hospital	Chil	Church	33	34	..	...	122
St. Mark's Hospital★+▲◇	Gen	Church	214	177	30	1,369	8,032
Salt Lake County General Hospital★+▲◇	Gen	County	222	159	22	549	4,089
Shriners Hospital for Crippled Children	Orth	NPAssn	20	20	..	...	61
Veterans Admin. Hospital★+▲	Gen	Vet	204	159	..	...	2,944
Spanish Fork, 5,227—Utah							
Hughes Memorial Hospital	Gen	Indiv	12	6	7	180	472
Tremonton, 1,630—Box Elder							
Valley Hospital	Gen	NPAssn	20	8	10	157	930
Vernal, 2,842—Uintah							
Uintah County Hospital	Gen	County	29	12	14	...	917

Key to symbols and abbreviations is on page 124

UTAH—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
American Fork, 5,124—Utah							
Utah State Training School	MeDe	State	702	656	..	...	80
Murray, 8,998—Salt Lake							
Cottonwood Maternity Hosp.	Mat	Church	23	9	25	751	765

VERMONT

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Barre, 10,922—Washington							
Barre City Hospital▲◇	Gen	NPAssn	85	55	20	565	3,120
Washington County Sanat.	TB	State	43	42	..	...	50
Bellows Falls, 3,881—Windham							
Rockingham Hospital	Gen	NPAssn	39	27	12	231	1,033
Bennington, 8,002—Bennington							
Henry W. Putnam Memorial Hospital▲	Gen	NPAssn	96	66	20	504	2,726
Brattleboro, 9,606—Windham							
[illegible]▲	Gen	NPAssn	75	44	22	481	2,472
[illegible]	Ment	NPAssn	750	690	..	...	251
[illegible]							
[illegible] Hospital★+▲◇	Gen	Church	215	131	35	668	5,696
Mary Fletcher Hospital★+▲◇	Gen	NPAssn	193	179	37	959	5,602
Hardwick, 1,696—Caledonia							
[illegible]	Gen	NPAssn	16	6	6	111	219
[illegible]	Gen	Indiv	15	6	6	87	219
Middlebury, 3,614—Addison							
Porter Hospital▲	Gen	NPAssn	45	20	10	323	2,343
[illegible]▲	Gen	NPAssn	70	47	20	368	3,587
[illegible]	Gen	NPAssn	30	19	10	188	1,255
Newport, 5,217—Orleans							
Broadview General Hospital	Gen	Indiv	26	14	11	198	805
Orleans County Memorial Hospital▲	Gen	NPAssn	35	23	10	236	1,992
Pittsford, 622—Rutland							
Vermont Sanatorium	TB	State	75	75	..	...	128
Proctor, 1,813—Rutland							
Proctor Hospital	Gen	NPAssn	35	21	7	...	1,029
Randolph, 2,223—Orange							
Gifford Memorial Hospital▲	Gen	NPAssn	53	41	10	245	1,906
Rutland, 17,659—Rutland							
Rutland Hospital▲	Gen	NPAssn	140	85	20	727	4,347
St. Albans, 8,552—Franklin							
[illegible]	Gen	NPAssn	70	...	21	...	..
[illegible]▲	Gen	NPAssn	58	55	6	554	3,149
[illegible]lonia							
[illegible]▲	Gen	NPAssn	55	35	10	251	1,572
[illegible]▲	Gen	NPAssn	50	42	16	368	1,700
Waterbury, 3,153—Washington							
Vermont State Hospital+	Ment	State	982	1,202	..	...	585
White River Junction, 2,365—Windsor							
Veterans Admin. Center+▲	Gen	Vet	250	205	..	...	3,897
Windsor, 3,467—Windsor							
Windsor Hospital	Gen	NPAssn	24	14	10	157	542
Winooski, 6,734—Chittenden							
Fanny Allen Hospital▲◇	Gen	Church	75	68	14	359	3,151

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Brandon, 1,673—Rutland							
Brandon State School	MeDe	State	485	432	..	...	68
Windsor, 3,467—Windsor							
Vermont State Prison Hospital	Inst	State	12	4	..	...	187

VIRGINIA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Abingdon, 4,705—Washington							
Johnston Memorial Hospital▲◇	Gen	NPAssn	80	54	10	264	2,797
[illegible]							
[illegible]★+▲◇	Gen	NPAssn	170	129	60	1,821	6,614
Circle Terrace Hospital	Gen	Corp	48	26	..	...	889
Altavista, 3,379—Campbell							
Piedmont General Hospital	Gen	Indiv	30	11	6	135	753
[illegible]							
[illegible]	Orth	NPAssn	17	16	..	...	348
[illegible]▲	Gen	NPAssn	115	104	28	1,392	6,435
John Russell Hospital	Gen	Corp	21	18	10	275	1,085
Bristol, 15,897—Washington							
Fort Shelby Hospital	Gen	Indiv	18	8	6	360	750
Kings Mountain Memorial Hospital▲	Gen	NPAssn	50	50	10	564	3,023
[illegible]							
[illegible]	[illegible]	State	269	256	..	...	200
[illegible]	[illegible]	Army	1,000	...	Reopened		1950
[illegible]	TB	State	360	307	..	...	337
[illegible]▲	TB	State	387	332	..	...	461
[illegible]							
Sanitarium▲	Gen	NPAssn	50	46	10	410	2,360
University of Virginia Hospital★+▲◇	Gen	State	490	415	61	1,625	13,640
Christiansburg, 2,952—Montgomery							
New Altamont Hospital▲	Gen	Corp	28	25	8	497	2,051

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Clifton Forge, 5,769—Alleghany							
Chesapeake and Ohio Hospital+▲◇	Gen	NPAssn	155	130	20	380	7,027
Coeburn, 764—Wise							
Coeburn Hospital	Gen	Part	26	10	5	198	854
[illegible]							
[illegible]	Gen	CyCo	36	18	12	296	1,511
[illegible]							
[illegible]	TB	NPAssn	37	30	..	...	48
[illegible]▲	Gen	NPAssn	170	151	26	1,183	8,551
Farmville, 4,351—Prince Edward							
Southside Community Hosp.▲	Gen	NPAssn	62	39	14	493	2,101
Fort Belvoir,—Fairfax							
U. S. Army Hospital	Gen	Army	349	152	50	896	5,822
Fort Eustis,—Warwick							
U. S. Army Hospital	Gen	Army	300	81	15	403	4,086
Fort Lee,—Dinwiddie							
U. S. Army Hospital	Gen	Army	200	105	12	365	4,046
Fort Monroe, 1,265—Elizabeth City							
U. S. Army Hospital▲	Gen	Army	150	20	17	164	1,408
Franklin, 4,653—Southampton							
Raiford Memorial Hospital▲	Gen	NPAssn	75	30	15	271	1,950
Fredericksburg, 12,143—Spotsylvania							
Mary Washington Hospital	Gen	NPAssn	85	64	20	830	4,494
Galax, 5,230—Grayson							
Waddell Hospital	Gen	Corp	75	26	16	145	1,058
[illegible]							
[illegible] Hospital	Gen	Indiv	30	17	5	107	631
Grundy, 1,476—Buchanan							
Grundy Hospital	Gen	Corp	65	40	10	289	3,061
Hampton, 5,957—Elizabeth City							
Dixie Hospital▲◇	Gen	NPAssn	140	63	30	806	3,483
Harrisonburg, 10,764—Rockingham							
Rockingham Memorial Hospital▲◇	Gen	NPAssn	173	124	28	1,192	6,075
Hot Springs, 1,000—Bath							
Community House Hospital	Gen	NPAssn	23	6	9	107	526
Kecoughtan, 1,900—Elizabeth City							
Veterans Admin. Center▲	Gen	Vet	604	383	..	...	2,093
Langley Air Force Base,—Elizabeth City							
U. S. Air Force Hospital▲	Gen	USAF	100	59	..	...	2,025
Lebanon, 622—Russell							
Lebanon General Hospital	Gen	Indiv	25	17	8	199	1,128
Lexington, 5,965—Rockridge							
Jackson Memorial Hospital	Gen	NPAssn	57	34	15	488	2,382
Luray, 2,722—Page							
Page Memorial Hospital	Gen	County	25	11	5	179	850
Lynchburg, 47,639—Campbell							
Guggenheimer Maternity Hospital	Unit of Marshall Lodge Memorial Hospital						
Lynchburg General Hosp.▲◇	Gen	City	140	92	28	727	5,155
Marshall Lodge Memorial Hospital▲	Gen	NPAssn	100	67	30	382	3,432
[illegible]▲	Gen	Church	100	96	24	926	3,791
[illegible]							
[illegible]	Gen	NPAssn	71	50	12	265	3,735
[illegible]▲	Ment	State	1,347	1,323	..	...	404
[illegible]							
[illegible]▲	Gen	NPAssn	100	61	26	603	4,030
[illegible]							
Northampton-Accomack Memorial Hospital◇	Gen	NPAssn	73	62	18	454	2,922
Newport News, 41,571—Warwick							
Elizabeth Buxton Hospital▲◇	Gen	Indiv	146	87	35	748	4,435
Riverside Hospital★+▲◇	Gen	NPAssn	180	118	35	1,189	6,943
Whittaker Memorial Hospital▲	Gen	NPAssn	57	32	20	446	1,546
Norfolk, 188,601—Norfolk							
De Paul Hospital★+▲◇	Gen	Church	259	181	45	1,641	8,896
[illegible]	TB	City	150	145	..	...	133
[illegible]▲	Gen	NPAssn	173	109	40	1,297	8,059
[illegible]	ENT	Part	11	2	..	...	361
[illegible]▲	Gen	NPAssn	130	71	28	771	3,306
[illegible]▲	Gen	NPAssn	321	227	55	1,266	9,274
[illegible]▲	Gen	USPHS	356	238	..	...	4,710
U. S. Naval Air Station Infirmary	Gen	Navy	113	55	..	...	2,940
Norton, 4,293—Wise							
Dr. Botts' Eye, Ear, Nose and Throat Hospital	ENT	Indiv	42	25	..	...	593
Norton General Hospital	Gen	Corp	40	23	10	590	1,800
St. Mary's Hospital	Gen	Church	46	17	7	58	903
[illegible]							
[illegible]	Gen	Corp	40	29	6	122	1,562
[illegible]							
[illegible]▲	Ment	State	4,043	4,033	...	..	1,003
Federal Reformatory Hospital	Inst	USPHS	46	15	..	...	837
Medical Center Hospital	Unit of Central State Hospital						
[illegible]▲◇	Gen	NPAssn	113	76	19	778	4,787
[illegible]	MeDe	State	250	241	..	...	59
[illegible]							
[illegible]▲	Gen	NPAssn	202	118	45	780	5,743
[illegible]▲	Gen	Church	153	78	30	847	3,635
U. S. Naval Hospital★+▲	Gen	Navy	1,658	1,171	82	2,715	15,455
Pulaski, 9,136—Pulaski							
Pulaski Hospital▲◇	Gen	Corp	85	68	20	430	3,372
Quantico, 1,211—Prince William							
U. S. Naval Hospital	Gen	Navy	200	105	17	387	2,390
Radford, 8,979—Montgomery							
Radford Community Hosp.▲◇	Gen	NPAssn	74	57	20	711	3,826
St. Albans Sanatorium	N&M	Corp	109	89	..	...	1,271
Richlands, 4,635—Tazewell							
Clinch Valley Clinic Hospital▲	Gen	Corp	101	70	14	503	5,352
Mattie Williams Hospital	Gen	Indiv	75	43	10	255	2,322

Key to symbols and abbreviations is on page 124.

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Richmond, 229,906—Henrico							
Crippled Children's Hosp.+▲	Orth	NPAssn	120	83	..	...	317
Dooley Hospital▲	Unit of Medical College of Virginia, Hospital Division						
Grace Hospital▲◇	Gen	Corp	90	83	20	613	4,838
Johnston-Willis Hospital★+▲◇	Gen	Corp	225	181	36	1,235	8,184
Medical College of Virginia, Hospital Division★+▲◇	Gen	State	812	626	108	3,614	19,092
Penitentiary Hospital	Inst	State	52	28	..	...	2,338
Pine Camp Hospital▲	TB	City	220	191	..	...	152
Retreat for the Sick▲	Gen	NPAssn	106	84	25	851	4,279
Richmond Community Hosp.	Gen	NPAssn	35	20	8	317	946
St. Elizabeth's Hospital+▲◇	Gen	Corp	58	54	..	...	2,021
St. Luke's Hospital▲◇	Gen	Corp	87	87	23	872	4,633
St. Philip Hospital▲◇	Unit of Medical College of Virginia, Hospital Division						
[illegible]▲	Gen	NPAssn	85	61	15	387	1,680
[illegible]▲	Gen	Corp	114	105	23	655	4,941
[illegible]▲	N&M	Corp	63	60	..	...	824
Veterans Admin. Hospital+▲	Gen	Vet	1,100	875	..	...	7,579
Westbrook Sanatorium	N&M	Corp	150	112	..	...	457
Roanoke, 91,089—Roanoke							
[illegible]▲	Gen	NPAssn	50	51	12	509	2,473
[illegible]▲	ENT	Indiv	25	11	..	...	1,897
Jefferson Hospital★+▲◇	Gen	Corp	150	132	30	991	5,616
Lewis-Gale Hospital★+▲◇	Gen	Corp	180	141	30	1,069	6,369
Memorial and Crippled Children's Hospital★▲◇	GenOrth	NPAssn	140	118	20	666	5,322
Roanoke City Sanatorium▲	TB	City	49	40	..	...	67
Shenandoah Hospital▲	Gen	Corp	63	37	8	281	2,677
Veterans Admin. Hospital+▲	Ment	Vet	2,000	1,864	..	...	2,840
Saltville, 2,677—Smyth							
[illegible]	Gen	NPAssn	18	17	6	181	1,196
[illegible]	Gen	Corp	45	27	10	270	2,188
[illegible]	Ment	State	155	157	..	...	643
[illegible]▲	Gen	NPAssn	75	54	20	644	3,168
[illegible]	Ment	State	2,685	2,590	..	...	931
Stuart, 720—Patrick							
Stuart Hospital	Gen	Indiv	23	16	8	193	559
[illegible]▲	Gen	NPAssn	61	47	15	353	2,195
[illegible]	[illegible] Charlottesville, Virginia						
[illegible]	[illegible]	Corp	43	30	10	213	1,034
Physicians Hospital	Gen	Corp	40	20	14	446	1,167
Waynesboro, 12,337—Augusta							
Waynesboro Community Hospital	Gen	NPAssn	36	24	14	427	1,768
Williamsburg, 6,726—James City							
Bell Hospital	Gen	Indiv	20	8	5	158	593
[illegible]▲	Ment	State	2,013	1,903	..	...	894
[illegible]▲	Gen	NPAssn	200	148	38	1,187	6,450
Woodstock, 1,786—Shenandoah							
Cora Miller Memorial Hosp.	Gen	Indiv	38	19	10	131	959
Wytheville, 5,405—Wythe							
Chitwood-Moore Clinic Hosp.	Gen	Part	17	11	8	254	890
Wythville Hospital	Gen	NPAssn	42	24	8	79	1,025

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Bristol, 15,897—Washington							
Grigsby's Hospital	Gen	Indiv	16	8	12	218	588
Colony, 100—Amherst							
[illegible]▲	MeDe	State	1,774	1,946	..	...	191
[illegible]▲	Unit of Lynchburg State Colony						
[illegible]	Gen	Part	13	9	7	163	494
Salem, 6,820—Roanoke							
White Cross Hospital	Drug	Part	25	8	..	...	283
State Farm, 75—Goochland							
State Farm Hospital	Inst	State	120	73	..	...	527
Sweet Briar, 200—Amherst							
Mary Harley Infirmary	Inst	NPAssn	15	2	..	...	467

WASHINGTON

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Aberdeen, [illegible]							
[illegible]▲	Gen	Church	115	95	30	782	4,603
[illegible]▲	Ment	Vet	904	816	..	...	372
[illegible]	Gen	Corp	25	14	5	162	996
[illegible]	Gen	Corp	45	26	15	350	1,576
[illegible]▲	Gen	Church	112	80	18	825	4,251
[illegible]▲	Gen	NPAssn	75	69	12	547	3,609
[illegible]	Gen	State	100	42	8	105	742
Bong,—Spokane							
U. S. Air Force Hospital▲	Gen	USAF	100	57	12	138	1,515
Bremerton, 27,746—Kitsap							
Harrison Memorial Hospital▲	Gen	NPAssn	110	59	30	804	5,258
Puget Sound Naval Memorial Hospital▲	Gen	NPAssn	90	55	30	530	3,277
U. S. Naval Hospital★▲	Gen	Navy	450	318	13	341	4,793

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Burlington, 2,336—Skagit							
Matthews General Hospital	Gen	Indiv	30	17	7	115	941
Centralia, 8,648—Lewis							
Lewis County General Hosp.	Gen	County	52	34	14	453	2,056
Chehalis, 5,633—Lewis							
MacMillan Sanatorium	TB	Counties	50	44	..	...	35
St. Helen Hospital▲	Gen	Church	40	35	14	388	2,250
Chelan, 2,154—Chelan							
Lake Chelan Community Hospital	Gen	NPAssn	26	8	8	159	557
Chewelah, 1,691—Stevens							
St. Joseph's Hospital	Gen	Church	40	23	10	152	1,500
Clarkston, 5,589—Asotin							
Asotin County Memorial Hospital	Gen	NPAssn	24	18	6	214	1,102
Colfax, 3,054—Whitman							
St. Ignatius Hospital	Gen	Church	61	42	17	260	2,079
Colville, 2,989—Stevens							
Mount Carmel Hospital	Gen	Church	45	29	10	224	1,575
Coulee Dam, 3,100—Douglas							
Coulee Dam Community Hospital	Gen	Fed	40	...	7	Estab. 1950	
Dayton, 2,960—Columbia							
John Brining Memorial Hospital	Gen	Indiv	22	15	6	104	769
Ellensburg, 8,417—Kittitas							
Ellensburg General Hospital▲	Gen	NPAssn	30	21	10	288	1,156
Morris Sorensen Memorial Hospital	Gen	Indiv	55	22	8	65	439
Valley General Hospital	Gen	Part	15	9	9	140	596
Elma, 1,537—Grays Harbor							
Elma General Hospital	Gen	Part	19	15	6	106	636
Oakhurst Sanatorium	TB	County	110	69	..	...	46
Ephrata, 4,584—Grant							
Columbia Basin Hospital	Gen	Corp	24	12	6	125	662
Everett, 33,807—Snohomish							
General Hospital▲◇	Gen	NPAssn	84	67	22	1,004	4,230
[illegible]▲	Gen	Church	130	91	20	713	5,209
[illegible]▲	Gen	Army	1,471	1,125	48	1,543	11,603
[illegible]▲	Ment	State	3,007	2,761	..	...	1,177
[illegible] O.),—Jefferson							
[illegible]	Gen	Army	25	...	Reopened 1950		
[illegible]	Gen	County	26	18	5	111	1,878
Kirkland, 4,[illegible]—King							
Fairfax Sanitarium	N&M	Indiv	50	39	..	...	335
Kirkland Hospital	Gen	Indiv	15	9	12	303	949
Lakeview, 200—Pierce							
Mountain View Sanatorium	TB	County	130	114	..	...	120
[illegible]	Gen	Corp	94	75	20	763	4,611
[illegible]▲	Gen	Church	90	70	20	380	4,961
Eastern State Hospital+▲	Ment	State	2,361	2,193	..	...	600
Monroe, 1,549—Snohomish							
Monroe General Hospital	Gen	Corp	72	...	6	Estab. 1950	
Moses Lake, 2,668—Grant							
[illegible]	Gen	County	14	12	3	136	1,021
[illegible]	Gen	Indiv	53	33	12	246	1,878
[illegible]	Gen	NPAssn	39	27	12	152	1,109
Colville Indian Hospital	Gen	IA	36	14	4	95	854
Newport, 1,363—Pend Oreille							
Newport Community Hospital	Gen	NPAssn	15	15	7	149	918
Odessa, 1,129—Lincoln							
Veterans' Memorial Hospital	Gen	County	16	...	6	Estab. 1950	
Olympia, 15,711—Thurston							
St. Peter's Hospital▲◇	Gen	Church	125	84	25	832	3,919
Pasco, 10,177—Franklin							
Our Lady of Lourdes Hosp.▲	Gen	Church	68	48	25	865	3,261
Port Angeles, 11,172—Clallam							
Davidson-Hay Hospital	Gen	Indiv	52	38	12	85	1,075
Port Angeles General Hospital	Gen	NPAssn	79	44	18	442	2,920
Port Townsend, 6,837—Jefferson							
St. John's Hospital	Gen	Church	80	48	13	279	974
Pullman, 11,979—Whitman							
Finch Memorial Hospital	Gen	State	43	22	6	308	1,794
Puyallup, 9,967—Pierce							
Puyallup General Hospital	Gen	Indiv	42	16	12	449	1,950
Raymond, 4,041—Pacific							
New Riverview Hospital and Clinic	Gen	Part	25	15	8	168	1,029
[illegible]▲	Gen	County	100	74	30	1,293	5,249
[illegible]▲	Gen	NPAssn	103	74	14	775	5,101
[illegible]	Gen	NPAssn	36	27	10	251	1,973
[illegible]▲	Orth	NPAssn	145	121	..	...	2,924
Cobb Hospital	Gen	Indiv	26	16	..	...	3,187
Columbus Hospital★▲◇	Gen	Church	175	96	35	562	4,320
Doctors Hospital★+▲⊙	Gen	NPAssn	200	152	44	1,829	8,445
Firland Sanatorium+▲◇	TB	County	1,268	1,168	..	...	789
Group Health Hospital	Gen	NPAssn	86	41	20	466	2,697
King County Hospital, Unit No. 1 (Harborview)★+▲◇	Gen	County	560	422	24	817	10,604
King County Hospital, Unit No. 2 (Georgetown Branch)▲	Chr	County	270	247	..	...	761
[illegible]▲	TB	Part	101	98	..	...	90
[illegible]▲	Gen	NPAssn	100	78	40	1,786	4,143
[illegible]	Surg	Indiv	20	10	..	...	2,806

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible]	N&M	NPAssn	29	19	..	...	181
[illegible]▲	Gen	Church	357	322	60	2,257	12,070
Diseases of the Chest▲	TB	NPAssn	100	79	..	...	101
Seattle General Hospital*▲	Gen	NPAssn	124	101	33	813	4,895
Swedish Hospital*+▲◇	Gen	NPAssn	330	295	74	2,672	13,877
U. S. Army Hospital▲	Gen	Army	140	121	20	503	4,834
U. S. Marine Hospital*+▲	Gen	USPHS	513	399	14	200	5,320
U. S. Naval Air Station Infirmary	Gen	Navy	47	16	10	199	1,029
University of Washington Infirmary	Inst	State	75	5	.	...	790
Virginia Mason Hospital*+▲◇	Gen	NPAssn	207	183	43	1,594	9,590
Washington Memorial Hospital	Gen	NPAssn	24	14	..	...	657
Sedro Woolley, 3,288—Skagit							
Memorial Hospital	Gen	NPAssn	37	33	12	237	1,615
Northern State Hospital▲⊙	Ment	State	2,273	2,200	..	...	632
Selah, 2,477—Yakima							
Central Washington Tuberculosis Hospital	TB	Counties	126	...	..	Estab.	1950
Shelton, 4,962—Mason							
Shelton General Hospital▲	Gen	NPAssn	54	32	12	265	1,783
Snohomish, 3,124—Snohomish							
Aldercrest Sanatorium	TB	County	60	63	..	...	60
Snoqualmie Falls, 900—King							
Nelems Memorial Hospital	Gen	Indiv	22	13	6	99	643
Soap Lake, 2,082—Grant							
McKay Memorial Hospital	Gen	NPAssn	30	15	7	78	835
Spokane, 160,484—Spokane							
Booth Memorial Hospital	Mat	Church	10	4	16	84	105
[illegible]*+▲◇	Gen	Church	213	166	44	2,074	9,562
[illegible]▲	TB	County	200	135	..	.	162
[illegible]*+▲◇	Gen	Church	430	383	75	2,654	16,802
St. Luke's Hospital*+▲◇	Gen	NPAssn	265	171	26	960	7,442
Shriners Hospital for Crippled Children+▲⊙	Orth	NPAssn	25	25	..	..	149
Veterans Admin. Hospital	Gen	Vet	200	...	..	Estab.	1950
Steilacoom, 1,225—Pierce							
United States Public Health Service Hospital▲	Inst	USPHS	94	39	..	...	798
Sunnyside, 4,169—Yakima							
Valley Memorial Hospital	Gen	NPAssn	38	23	14	496	1,862
Tacoma, 142,975—Pierce							
Doctors Hospital	Gen	NPAssn	63	44	..	...	2,360
[illegible]▲	Gen	NPAssn	100	73	6	206	3,557
Pierce County Hospital*▲	Gen	CyCo	226	160	18	428	4,331
St. Joseph's Hospital*+▲◇	Gen	Church	285	200	67	1,613	12,426
[illegible]▲	Gen	NPAssn	213	168	70	2,381	9,026
[illegible]▲	TB	IA	336	246	..	...	1,364
U. S. Air Force Hospital	Gen	USAF	50	24	..	...	1,526
Tonasket, 643—Okanogan							
St. Martin's Hospital	Gen	Church	45	27	6	226	1,171
Vancouver, 41,449—Clark							
Clark County Hospital	Gen	County	78	62	6	65	946
Northern Permanente Hospital*+▲	Gen	NPAssn	154	80	16	330	2,270
St. Joseph's Hospital▲◇	Gen	Church	130	96	45	974	4,245
Vancouver Memorial Hospital▲	Gen	NPAssn	150	107	30	881	6,089
Veterans Admin. Hospital	Gen	Vet	575	495	..	...	3,862
Walla Walla, 24,071—Walla Walla							
Blue Mountain Sanatorium	TB	County	45	43	..	...	38
St. Mary's Hospital▲◇	Gen	Church	125	86	25	771	3,991
Veterans Admin. Hospital+▲⊙	TB	Vet	421	342	..	...	831
Walla Walla General Hosp.▲	Gen	Church	53	46	14	446	2,515
Wenatchee, 12,965—Chelan							
Central Washington Deaconess Hospital▲◇	Gen	Church	100	62	24	587	2,881
St. Anthony's Hospital▲	Gen	Church	63	45	18	396	2,421
Yakima, 38,375—Yakima							
St. Elizabeth Hospital▲◇	Gen	Church	236	158	50	1,740	10,332
Yakima County Hospital	Gen	County	128	92	10	374	3,758
Yakima Valley Memorial Hospital	Gen	NPAssn	117	...	42	Estab.	1950

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Arlington, 1,633—Snohomish							
Arlington General Hospital	Gen	Indiv	18	11	8	156	722
Cle Elum, 2,193—Kittitas							
Roslyn Cle Elum Beneficial Company Hospital	Indus	NPAssn	21	16	..	...	490
Colville, 2,989—Stevens							
Valley View Hospital	Gen	County	40	29	4	7	317
Ione, 681—Pend Oreille							
Ione Hospital	Gen	Indiv	10	5	5	59	340
Medical Lake, 3,015—Spokane							
Lakeland Village	MeDe	State	1,400	1,390	..	...	35
Seattle, 462,440—King							
Seneca Summit Surgery Hospital	Surg	Corp	10	8	..	...	1,270
Shadel Sanitarium	Alcoh	Corp	37	24	..	...	826
Tacoma, 142,975—Pierce							
Washington Minor Hospital	Gen	NPAssn	21	13	..	...	1,134
White Shield Home	Mat	NPAssn	20	15	10	46	71
Walla Walla, 24,071—Walla Walla							
Washington State Penitentiary Hospital	Inst	State	59	38	..	...	530
Waterville, 1,016—Douglas							
Douglas County Memorial Hospital	Gen	NPAssn	10	4	4	27	192

WEST VIRGINIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Alderson, 1,466—Monroe							
Federal Reformatory for Women	Inst	USPHS	46	22	6	11	93
Barboursville, 1,940—Cabell							
Barboursville Unit of Huntington State Hospital	MeDe	State	336	314	..	...	4
Beckley, 19,255—Raleigh							
Beckley Hospital+▲	Gen	Part	180	131	20	591	6,91
Pinecrest Sanitarium▲	TB	State	647	607	..	...	64
Raleigh General Hospital◇	Gen	Corp	90	74	20	441	3,43
Veterans Admin. Hospital	Gen	Vet	200	...	..	Estab.	195
[illegible]	Gen	County	42	38	9	212	1,26
[illegible]▲	Gen	Corp	180	148	30	998	8,06
Brown's Hospital	Gen	Indiv	45	5	3	22	42
St. Luke's Hospital▲	Gen	Corp	63	43	15	312	2,59
Buckhannon, 5,997—Upshur							
St. Joseph's Hospital▲	Gen	Church	44	28	14	443	1,55
Charleston, 72,818—Kanawha							
Charleston General Hosp.*+▲◇	Gen	NPAssn	240	152	35	909	8,011
Kanawah Valley Hospital*▲◇	Gen	Corp	146	96	15	699	4,99
McMillan Hospital▲◇	Gen	Corp	102	82	20	893	4,57
Mountain State Memorial Hospital▲◇	Gen	NPAssn	88	71	12	505	3,8
St. Francis Hospital▲◇	Gen	Church	130	119	30	1,226	5,59
Salvation Army Hospital	Gen	Church	20	11	9	289	891
Staats Hospital▲	Gen	Corp	56	42	13	224	2,02
Clarksburg, 31,817—Harrison							
St. Mary's Hospital▲◇	Gen	Church	205	182	39	1,111	7,34
Union Protestant Hospital◇	Gen	NPAssn	60	52	18	671	2,751
Veterans Admin. Hospital	Gen	Vet	200	...	..	Estab.	1951
Denmar, 100—Pocahontas							
Denmar Sanatorium	TB	State	125	115	..	...	89
Elkins, 9,117—Randolph							
Davis Memorial Hospital▲◇	Gen	NPAssn	99	51	19	475	2,29
Memorial General Hospital▲	Gen	NPAssn	105	69	15	142	2,419
[illegible]							
[illegible]▲	Gen	State	68	32	10	192	1,623
[illegible]▲	Gen	City	147	125	29	1,186	5,593
Gassaway, 1,293—Braxton							
Gassaway Hospital	Gen	Corp	18	13	6	188	713
Glen Dale, 1,474—Marshall							
Reynolds Memorial Hospital▲	Gen	Church	99	67	17	494	3,259
Grafton, 7,297—Taylor							
Grafton City Hospital	Gen	City	66	37	10	316	2,20
Hinton, 5,737—Summers							
Hinton Hospital▲	Gen	Corp	75	50	12	187	2,39
Holden, 3,000—Logan							
Holden Hospital	Gen	Part	36	25	4	312	1,85
Hopemont, 475—Preston							
[illegible]▲	TB	State	292	244	..	...	267
[illegible] Hospital+▲	Gen	NPAssn	165	140	20	135	4,339
Guthrie Hospital	Gen	Indiv	24	13	6	122	990
[illegible]▲	Orth	NPAssn	98	52	..	...	455
[illegible]	Ment	State	1,290	1,237	..	...	860
[illegible]▲	Gen	NPAssn	130	71	22	520	3,272
[illegible]▲	Gen	Church	300	253	50	2,136	13,299
Veterans Admin. Hospital▲	Gen	Vet	290	239	..	...	2,228
Keyser, 6,302—Mineral							
Potomac Valley Hospital	Gen	Corp	50	40	16	397	2,031
Lakin, 50—Mason							
Lakin State Hospital▲	Ment	State	460	450	..	...	175
[illegible]							
[illegible]▲	Gen	Corp	100	49	26	486	3,675
[illegible]	Gen	Corp	58	39	5	171	2,649
Pocahontas Memorial Hospital	Gen	County	31	23	6	188	1,181
Martinsburg, 15,566—Berkeley							
City Hospital◇	Gen	NPAssn	85	65	15	389	1,595
[illegible]▲	Gen	NPAssn	85	52	17	390	2,088
[illegible]▲	Gen	Vet	900	724	..	...	3,883
Morris Memorial Hospital+▲	Orth	NPAssn	125	83	..	...	525
Montgomery, 3,476—Fayette							
[illegible]+▲◇	Gen	Corp	127	107	15	419	5,306
[illegible]▲	Gen	NPAssn	125	82	26	829	4,068
[illegible]▲	Gen	Church	85	...	19	Estab.	1950
Wetzel County Hospital	Gen	NPAssn	30	27	7	392	1,947
Oak Hill, 4,504—Fayette							
[illegible]▲	Gen	Part	75	46	8	145	2,331
[illegible] Hospital▲◇	Gen	City	160	130	35	999	5,496
St. Joseph's Hospital*▲◇	Gen	Church	170	150	30	1,070	6,016
Parsons, 2,001—Tucker							
Tucker County Hospital	Gen	Corp	39	22	12	92	673
Philippi, 2,552—Barbour							
[illegible]+▲◇	Gen	Part	70	57	12	210	2,714
[illegible]	Gen	Corp	58	36	12	561	2,473
Charles Town General Hosp.	Gen	NPAssn	42	23	12	228	1,193
Ravenswood, 1,163—Jackson							
Ravenswood Hospital	Gen	Indiv	14	5	5	56	264
[illegible]	Gen	Indiv	35	16	12	271	930
[illegible]	Gen	Church	36	32	10	363	2,425
[illegible]▲	Gen	Corp	48	34	6	240	1,909

Key to symbols and abbreviations is on page 124

WEST VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
South Charleston, 16,627—Kanawha							
Dunn Hospital	Gen	Indiv	24	12	12	161	790
Herbert J. Thomas Memorial Hospital▲	Gen	NPAssn	97	70	17	997	5,024
West Virginia Medical Center	Ven	State	152	...	8	...	....
Spencer, 2,581—Roane							
[illegible]	Gen	Indiv	21	10	5	101	550
[illegible]	Gen	NPAssn	21	19	6	137	1,002
[illegible]	Ment	State	1,000	1,000	..	...	364
[illegible]	Gen	Corp	53	15	12	433	1,886
Triadelphia, [illegible]—Ohio							
Ohio County Tuberculosis Sanatorium	TB	County	37	30	..	...	30
Welch, 6,545—McDowell							
Grace Hospital▲	Gen	Corp	153	120	12	357	...
Stevens Clinic Hospital▲	Gen	Corp	140	103	15	461	6,605
Welch Emergency Hospital	Gen	State	115	88	10	116	1,622
Weston, 8,923—Lewis							
Weston City Hospital	Gen	Corp	50	22	12	266	1,142
Weston State Hospital▲	Ment	State	1,965	1,936	..	...	584
Wheeling, 58,447—Ohio							
Ohio Valley General Hospital★+▲◇	Gen	NPAssn	330	267	30	1,411	9,557
Wheeling Hospital★▲◇	Gen	Church	250	190	40	1,217	7,960
Williamson, 8,559—Mingo							
Williamson Memorial Hosp.▲	Gen	Part	100	58	10	492	4,226

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Charleston, 72,818—Kanawha							
Hillcrest Sanatorium	TbChil	NPAssn	52	28	..	...	37
[illegible]							
[illegible]	N&M	Corp	25	12	..	...	39
[illegible]▲	Gen	Indiv	27	14	7	102	817
Moundsville, 14,759—Marshall							
West Virginia Penitentiary Hospital	Inst	State	75	35	..	...	602
St. Marys, 2,193—Pleasants							
West Virginia Training School	MeDe	State	320	145	..	...	...

WISCONSIN

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Adams, 1,420—Adams							
Adams-Friendship Hospital	Gen	NPAssn	8	4	2	49	247
Algoma, 3,382—Kewaunee							
Algoma Hospital	Gen	NPAssn	12	9	4	184	591
Amery, 1,611—Polk							
[illegible]	Gen	Indiv	19	14	6	188	823
[illegible]							
[illegible] Hospital	Gen	Church	57	41	14	636	2,531
Appleton, 33,892—Outagamie							
St. Elizabeth Hospital▲	Gen	Church	200	135	45	2,069	7,623
Arcadia, 1,947—Trempealeau							
St. Joseph's Hospital	Gen	Church	75	37	18	191	1,063
Ashland, 10,594—Ashland							
[illegible]	Gen	Church	126	57	18	375	3,126
[illegible]	Gen	Church	60	47	8	239	2,019
B[illegible]							
[illegible]	Gen	NPAssn	16	10	6	192	848
B[illegible]—Sauk							
St. Mary's Ringling Hospital	Gen	Church	84	50	22	576	2,415
Bayfield, 1,149—Bayfield							
Pure Air Sanatorium	TB	Counties	65	56	..	...	114
Beaver Dam, 11,833—Dodge							
Lutheran Deaconess Hospital	Gen	Church	59	48	12	320	2,204
St. Joseph's Hospital▲	Gen	Church	75	68	19	627	3,193
Beloit, 29,541—Rock							
[illegible]▲	Gen	City	146	97	39	1,130	6,517
[illegible]	Gen	NPAssn	39	27	13	317	1,490
[illegible] Clinic and Hospital	Gen	Part	29	25	10	302	928
Boscobel, 2,340—Grant							
Brookside-Parker Hospital	Gen	Part	22	17	8	112	567
[illegible]							
[illegible]▲	Gen	NPAssn	34	24	14	440	1,496
[illegible]	Gen	Army	450	...	Reopened		1950
[illegible] va.							
[illegible]	MeDe	State	1,826	1,735	..	...	220
[illegible] Hospital	Gen	Church	181	138	29	920	5,824
Clintonville, 4,652—Waupaca							
Clintonville Community Hospital	Gen	City	52	30	19	269	1,583
Columbus, 3,242—Columbia							
St. Mary's Hospital	Gen	Church	56	35	12	275	1,421
[illegible]							
[illegible]	Gen	NPAssn	20	6	6	163	600
[illegible]	Gen	NPAssn	25	19	6	206	817
[illegible]	Gen	Church	61	51	16	446	1,657
[illegible]	Gen	NPAssn	179	151	32	923	7,188
[illegible] Washington Sanatorium	TB	County	92	89	..	...	58
Sacred Heart Hospital	Gen	Church	200	169	15	765	7,098
Edgerton, 3,495—Rock							
Edgerton Memorial Hospital	Gen	NPAssn	31	21	10	240	1,091
Elkhorn, 2,917—Walworth							
Lakeland Hospital▲	Gen	County	85	58	22	649	2,506

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Fond du Lac, 29,826—Fond du Lac							
St. Agnes Hospital★▲◇	Gen	Church	300	305	50	1,674	10,696
Fort Atkinson, 6,257—Jefferson							
Fort Atkinson Memorial Hospital	Gen	NPAssn	62	58	21	532	1,607
Frederic, 725—Polk							
[illegible]	Gen	City	30	17	8	157	921
[illegible]	Gen	NPAssn	30	15	4	48	474
Green Bay, 52,443—Brown							
[illegible]▲	Gen	Church	97	102	22	995	5,164
[illegible]▲	Gen	Church	100	72	25	1,104	4,498
[illegible]	Gen	Church	225	194	25	1,330	10,364
Hartford, 4,547—Washington							
St. Joseph's Hospital	Gen	Church	58	29	15	376	1,227
Hawthorne, 75—Douglas							
Middle River Sanatorium▲	TB	County	109	107	..	...	76
Hayward, 1,573—Sawyer							
[illegible]	Gen	IA	45	27	10	142	711
H[illegible]							
[illegible]	Gen	NPAssn	25	17	6	217	929
Iola, [illegible]—Waupaca							
Iola Hospital	Gen	NPAssn	19	12	6	113	451
Janesville, 24,829—Rock							
Mercy Hospital★▲◇	Gen	Church	200	100	30	834	4,335
Pinehurst Sanatorium▲	TB	County	75	70	..	...	73
Jefferson, 3,620—Jefferson							
Forest Lawn Sanatorium	TB	County	58	47	..	...	125
Kaukauna, 8,361—Outagamie							
Riverview Sanatorium▲	TB	County	65	61	..	...	63
Kenosha, 54,360—Kenosha							
Kenosha Hospital▲	Gen	NPAssn	150	114	25	682	7,503
St. Catherine's Hospital▲	Gen	Church	78	65	25	...	3,892
Willowbrook Sanatorium▲	TB	County	45	41	..	...	33
Keshena, 500—Shawano							
St. Joseph's Indian Hospital	Gen	Fed	63	33	9	133	1,229
Kewaunee, 2,576—Kewaunee							
Witcpalek-Nesemann Hospital	Gen	Part	9	4	5	124	339
La Crosse, 47,396—La Crosse							
Grandview Hospital▲	Gen	NPAssn	84	32	10	152	1,184
La Crosse Hospital	Gen	NPAssn	42	29	8	171	1,170
La Crosse Lutheran Hosp.★+▲	Gen	Church	135	112	12	398	5,124
St. Ann's Hospital	Unit of St. Francis Hospital						
St. Francis Hospital★▲◇	Gen	Church	308	248	48	1,619	8,252
Ladysmith, 3,910—Rusk							
St. Mary's Hospital	Gen	Church	75	60	15	446	2,798
Lancaster, 3,245—Grant							
Grant Community Hospital	Gen	NPAssn	16	12	6	219	740
Lancaster General Hospital	Gen	Part	18	10	6	84	417
Laona, 1,800—Forest							
Ovitz Hospital	Gen	Part	20	7	6	139	435
Madison, 95,594—Dane							
Lake View Sanatorium▲	TB	County	140	134	..	...	140
Madison General Hosp.★+▲◇	Gen	NPAssn	177	189	26	1,536	7,554
Mendota State Hospital	Ment	State	818	779	..	...	1,229
Methodist Hospital★+▲◇	Gen	Church	132	95	18	507	4,870
[illegible]	TB	NPAssn	50	47	..	...	49
[illegible]▲	Gen	Church	230	190	50	1,776	8,162
[illegible]▲	Gen	State	750	612	22	263	15,178
Wisconsin Orthopedic Hospital for Children▲	Unit of State of Wisconsin General Hospital						
Manitowoc, 27,444—Manitowoc							
Holy Family Hospital▲◇	Gen	Church	230	121	40	1,111	7,236
Marinette, 14,198—Marinette							
[illegible]▲	Gen	County	80	77	25	677	3,465
[illegible]							
[illegible]▲	Gen	Church	250	145	30	1,069	7,785
Mauston, 3,168—Juneau							
Mauston Hospital	Gen	Corp	50	26	10	258	1,371
Medford, 2,795—Taylor							
Medford Clinic Hospital	Gen	Corp	38	25	8	326	1,379
Menomonie, 8,184—Dunn							
Memorial Hospital	Gen	CyCo	34	20	22	357	945
Merrill, 8,913—Lincoln							
[illegible]▲	Gen	Church	60	55	14	357	2,642
[illegible]	Inst	County	28	...	..	...	...
[illegible]							
Columbia Hospital★+▲◇	Gen	NPAssn	160	135	35	961	5,379
Doctors Hospital	Gen	NPAssn	56	52	6	150	2,365
Evangelical Deaconess Hospital★+▲◇	Gen	Church	138	117	30	1,580	7,114
Johnston Emergency Hosp.▲	Emer	City	25	25	4	5	...
Mercy Hospital	Gen	NPAssn	50	34	14	332	1,962
[illegible]▲	Chil	NPAssn	150	118	..	...	5,075
[illegible]	Ment	County	2,384	2,322	..	...	534
[illegible]▲	Gen	County	900	800	33	658	21,076
[illegible] for Mental Diseases+▲	Ment	County	1,141	1,118	..	...	698
Milwaukee Hospital★+▲◇	Gen	Church	276	267	70	2,947	9,667
Milwaukee Sanitarium	See Wauwatosa						
Misericordia Hospital★▲◇	Gen	Church	110	79	30	1,261	4,593
Mount Sinai Hospital★+▲◇	Gen	NPAssn	175	153	48	2,094	8,311
Muirdale Sanatorium+▲⊙	TB	County	607	567	..	...	580
[illegible]	Gen	Church	250	189	..	...	2,293
[illegible]	Gen	Church	111	75	40	1,601	5,193
[illegible]▲	Gen	Church	369	269	85	3,856	13,794
St. Luke's Hospital★+▲	Gen	Church	135	126	26	1,660	7,343
St. Mary's Hill Sanitarium▲	N&M	Church	100	83	..	...	355
St. Mary's Hospital★+▲◇	Gen	Church	210	193	52	1,733	7,676
St. Michael Hospital★▲	Gen	Church	137	92	23	834	4,648
Shorewood Hospital-Sanitarium▲	N&M	Corp	55	50	..	...	339
South View Hospital▲	Iso	City	205	21	..	...	787

Key to symbols and abbreviations is on page 124

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Veterans Admin. Center+▲....	Gen	Vet	1,340	1,054	..	...	7,532
West Side Hospital............	Gen	NPAssn	36	24	15	210	1,846
Mondovi, 2,276—Buffalo							
Gillette Hospital..............	Gen	Indiv	22	16	4	104	520
Mondovi Clinic Hospital.......	Gen	Indiv	25	15	4	78	595
Monroe, 7,008—Green							
St. Clare Hospital.............	Gen	Church	75	82	18	747	4,505
Neenah, 12,418—Winnebago							
Theda Clark Memorial Hosp.▲	Gen	NPAssn	170	105	31	847	4,661
Neillsville, 2,655—Clark							
Neillsville Hospital............	Gen	NPAssn	24	13	11	204	839
New London, 4,908—Waupaca							
Borchardt Clinic Memorial Hospital...................	Gen	NPAssn	15	12	6	96	586
Community Hospital..........	Gen	Church	55	39	15	395	1,602
New Richmond, 2,869—St. Croix							
Holy Family Hospital.... ...	Gen	Church	30	...	12	Estab. 1950	
Oconomowoc, 5,322—Waukesha							
Rogers Memorial Sanitarium...	N&M	NPAssn	50	43	..	...	115
Summit Hospital..............	Gen	Corp	45	42	9	121	569
Oconto, 5,046—Oconto							
Oconto County and City Hospital.........	Gen	NPAssn	42	24	15	191	876
Oconto Falls, 2,053—Oconto							
Oconto Falls Hospital.........	Gen	City	20	11	8	279	960
Onalaska, 2,561—La Crosse							
Oak Forest Sanatorium........	TB	County	60	51	..	...	53
Osceola, 642—Polk							
Ladd Memorial Hospital.......	Gen	NPAssn	14	9	2	49	412
Oshkosh, 40,934—Winnebago							
Mercy Hospital★▲◇..	Gen	Church	207	158	50	1,244	6,233
Park Falls, 2,933—Price							
Park Falls Hospital............	Gen	NPAssn	35	19	10	202	939
Platteville, 5,718—Grant							
Wilson Cunningham Hospital..	Gen	Part	24	11	8	107	331
Plum City, 368—Pierce							
Plum City Hospital	Gen	NPAssn	32	18	5	127	667
Plymouth, 4,540—Sheboygan							
Plymouth Hospital..	Gen	Church	40	24	14	216	811
Rocky Knoll Sanatorium▲	TB	County	78	74	..	..	80
Portage, 7,283—Columbia							
Divine Savior Hospital.. . .	Gen	Church	92	70	19	557	3,274
Port Washington, 4,754—Ozaukee							
St. Alphonsus Hospital.. .	Gen	Church	70	62	15	520	2,732
Prairie du Chien, 5,392—Crawford							
Beaumont Hospital....	Gen	NPAssn	18	9	8	193	586
Prairie du Chien Sanitarium-Hospital.....	Gen	NPAssn	55	33	8	251	2,063
Prescott, 857—Pierce							
St. Croixdale Sanitarium....	GenN&M	Corp	67	60	2	29	1,002
Racine, 70,749—Racine							
St. Luke's Hospital▲◇.........	Gen	Church	108	90	34	1,138	4,507
St. Mary's Hospital★▲.........	Gen	Church	211	122	50	1,164	8,237
Sunny Rest Sanatorium	TB	County	80	71	..	...	70
Reedsburg, 4,078—Sauk							
Reedsburg Municipal Hospital.	Gen	City	30	21	12	332	1,055
Rhinelander, 8,728—Oneida							
St. Mary's Hospital▲.	Gen	Church	75	65	12	510	2,924
Rice Lake, 6,911—Barron							
Lakeside Methodist Hospital..	Gen	Church	50	32	12	390	1,984
St. Joseph's Hospital.... . .	Gen	Church	40	23	11	359	2,285
Richland Center, 4,620—Richland							
Richland Hospital............	Gen	NPAssn	69	48	14	647	2,462
Ripon, 5,610—Fond du Lac							
Ripon Municipal Hospital.....	Gen	City	19	16	10	219	938
River Falls, 3,877—Pierce							
City Hospital......	Gen	City	25	17	8	...	628
St. Croix Falls, 1,058—Polk							
St. Croix Falls Hospital.......	Gen	NPAssn	18	10	5	135	547
Shawano, 5,869—Shawano							
Shawano Municipal Hospital..	Gen	NPAssn	65	48	20	459	2,070
Sheboygan, 42,485—Sheboygan							
St. Nicholas Hospital..........	Gen	Church	222	177	40	1,191	7,310
Sheboygan Memorial Hospital▲	Gen	NPAssn	103	96	22	714	4,328
Shell Lake, 872—Washburn							
Shell Lake Hospital...........	Gen	NPAssn	17	12	5	231	1,047
Shullsburg, 1,305—Lafayette							
Shullsburg Memorial Hospital.	Gen	NPAssn	15	8	4	28	185
South Milwaukee, 12,826—Milwaukee							
South Milwaukee Hospital.....	Gen	Indiv	16	10	6	314	727
Sparta, 5,878—Monroe							
St. Mary's Hospital............	Gen	Church	65	46	20	702	2,817
Stanley, 2,008—Chippewa							
Victory Hospital....	Gen	NPAssn	21	12	7	326	1,397
Statesan, 110—Waukesha							
Wisconsin State Sanatorium+▲	TB	State	239	153	..	...	103
Stevens Point, 16,550—Portage							
River Pines Sanatorium▲......	TB	Church	62	59	..	...	59
St. Michael's Hospital▲........	Gen	Church	135	127	35	812	5,242
Stoughton, 4,913—Dane							
Stoughton Hospital...........	Gen	NPAssn	47	31	13	270	1,185

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Sturgeon Bay, 6,913—Door							
Door County Memorial Hosp..	Gen	NPAssn	60	52	17	493	2,857
Superior, 35,091—Douglas							
St. Francis Hospital...........	Gen	Church	50	38	10	238	1,198
St. Joseph's Hospital..........	Gen	Church	75	38	20	379	1,965
Tomah, 4,771—Monroe							
Veterans Admin. Hospital+▲..	Ment	Vet	1,172	1,027	..	...	663
Tomahawk, 3,541—Lincoln							
Sacred Heart Hospital.........	Gen	Church	45	31	6	159	1,231
Two Rivers, 9,890—Manitowoc							
Two Rivers Municipal Hosp...	Gen	City	52	32	14	395	2,211
Union Grove, 1,351—Racine							
Southern Wisconsin Colony and Training School.........	MeDe	State	1,017	975	..	...	97
Veterans Administration,—Milwaukee							
Veterans Admin. Center.......	See Milwaukee						
Viroqua, 3,788—Vernon							
Vernon Memorial Hospital.....	Gen	NPAssn	28	27	7	379	1,329
Washburn, 2,078—Bayfield							
Washburn Hospital............	Gen	NPAssn	15	10	5	63	341
Watertown, 12,393—Jefferson							
St. Mary's Hospital............	Gen	Church	85	68	20	811	3,655
..							
	Unit of Milwaukee Children's Hospital						
▲	TB	Vet	256	219	..	...	306
Waukesha Memorial Hospital▲	Gen	City	110	90	31	1,123	5,347
Waupaca, 3,922—Waupaca							
Mirror Lake Hospital..........	Gen	NPAssn	12	7	4	109	528
Waupaca Hospital.............	Gen	Part	17	12	6	65	481
Waupun, 6,725—Fond du Lac							
Central State Hospital.........	Ment	State	360	344	..	...	115
Wausau, 30,386—Marathon							
Mount View Sanatorium.......	TB	County	74	63	..	...	74
St. Mary's Hospital★▲◇.......	GenIso	Church	240	186	45	1,103	8,340
Wausau Memorial Hospital▲...	Gen	NPAssn	130	89	30	583	4,208
Wauwatosa, 33,300—Milwaukee							
Milwaukee Sanitarium+▲......	N&M	Corp	151	141	..	...	502
West Bend, 6,845—Washington							
St. Joseph's Hospital..........	Gen	Church	100	52	24	470	2,513
West DePere,—Brown							
Hickory Grove Sanatorium....	TB	County	86	78	..	...	104
Whitehall, 1,372—Trempealeau							
Whitehall Community Hosp...	Gen	NPAssn	38	32	9	177	1,695
Whitelaw, 225—Manitowoc							
Maple Crest Sanatorium▲......	TB	County	45	44	..	...	37
Wild Rose, 559—Waushara							
Wild Rose Hospital............	Gen	NPAssn	24	22	6	91	901
	TB	Counties	67	64	..	...	157
▲	Ment	State	983	986	..	...	1,278
Wisconsin Rapids, 13,518—Wood							
Riverview Hospital............	Gen	NPAssn	85	65	25	843	3,760
Wood,—Milwaukee							
Veterans Admin. Center.......	See Milwaukee						

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Appleton, 33,892—Outagamie							
Outagamie County Hospital...	Ment	County	268	265	..	...	28
Chippewa Falls, 11,072—Chippewa							
Chippewa County Hospital....	Ment	County	375	375	..	...	37
Dodgeville, 2,515—Iowa							
Iowa County Hospital.........	Ment	County	184	166	..	...	10
Durand, 1,958—Pepin							
St. Benedict Community Hospital.....................	Gen	Church	21	15	8	160	695
Elkhorn, 2,917—Walworth							
Walworth County Hospital....	Ment	County	236	231	..	...	53
Fond du Lac, 29,826—Fond du Lac							
Fond du Lac County Hospital.	Ment	County	332	323	..	...	52
Green Bay, 52,443—Brown							
Brown County Hospital.......	Ment	County	316	308	..	...	69
Wisconsin State Reformatory Hospital.....................	Inst	State	10	4	..	...	278
Jefferson, 3,620—Jefferson							
Jefferson County Hospital.....	Ment	County	285	283	..	...	27
Juneau, 1,437—Dodge							
Dodge County Hospital.......	Ment	County	268	235	..	...	254
Madison, 95,594—Dane							
East Washington Avenue Hospital.....................	Iso	City	40	2	..	...	56
Manitowoc, 27,444—Manitowoc							
Manitowoc County Hospital...	Ment	County	275	208	..	...	19
Marshfield, 12,377—Wood							
Wood County Hospital........	Ment	County	250	249	..	...	13
Menomonie, 8,184—Dunn							
Dunn County Hospital........	Ment	County	179	180	..	...	18
Milwaukee, 632,651—Milwaukee							
Ivanhoe Sanitarium...........	Alcoh	Corp	11	...	..	...	184
Layton Home..................	Unit of Milwaukee Hospital						
Margo Hospital and Convalescent Home.........	Conv	Indiv	27	25	..	...	87

WISCONSIN—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
St. Camillus Hospital	Chr	Church	85	86	..	...	44
Salvation Army Martha Washington Women's Home and Hospital	Mat	Church	76	46	15	219	233
Shore View Home and Annex	Conv	Corp	76	75	..	...	104
Monroe, 7,008—Green Green County Hospital	Ment	County	292	270	..	...	48
[illegible]	N&M	Church	90	75	..	...	129
[illegible]	Ment	County	385	379	..	...	38
[illegible]	Ment	County	310	292	..	...	46
[illegible]	Iso	City	50	3	..	...	87
[illegible] and Home	InstMent	County	470	458	..	...	148
Reedsburg, 4,078—Sauk Sauk County Hospital and Home	Ment	County	279	240	..	...	68
[illegible]	Ment	County	154	141	..	...	22
Shawano, 5,869—Shawano Shawano County Hospital	Ment	County	190	190	..	...	36
[illegible]	Ment	County	300	281	..	...	56
Sparta, 5,878—Monroe Monroe County Mental Hosp.	Ment	County	100	186	..	...	60
Viroqua, 3,788—Vernon Vernon County Hospital	Ment	County	169	156	..	...	27
Watertown, 12,393—Jefferson Bethesda Lutheran Home	MeDe	Church	350	330	..	...	12
Waukesha, 21,186—Waukesha Waukesha County Hospital	Ment	County	230	221	..	...	61
Waupun, 6,725—Fond du Lac Wisconsin State Prison Hosp.	Inst	State	21	17	..	...	395
Wausau, 30,386—Marathon Marathon County General Hospital	Inst	County	65	55	..	...	110
Marathon County Hospital	Ment	County	220	214	..	...	63
West Salem, 1,372—La Crosse La Crosse County Hospital	Ment	County	303	292	..	...	44
Weyauwega, 1,208—Waupaca Waupaca County Hospital	Ment	County	196	188	..	...	11
Whitehall, 1,372—Trempealeau Trempealeau County Hospital	Ment	County	215	201	..	...	35
Winnebago, 150—Winnebago Winnebago County Hospital	Ment	County	266	265	..	...	30
Wyocena, 706—Columbia Columbia County Hospital	Ment	County	325	315	..	...	...

WYOMING

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Afton, 1,311—Lincoln Latter-Day Saints Star Valley Hospital	Gen	Church	12	6	6	204	572
Basin, 1,217—Big Horn Basin Hospital	Gen	Indiv	15	5	5	82	401
Wyoming State Sanatorium▲	TB	State	34	28	..	...	55
Casper, 23,557—Natrona Memorial Hospital of Natrona County▲	Gen	County	160	113	24	954	5,865
Cheyenne, 31,807—Laramie Memorial Hospital of Laramie County▲	Gen	County	150	117	30	922	5,542
[illegible]▲	Gen	Vet	201	127	..	...	2,275
[illegible]	Gen	NPAssn	50	21	14	211	1,463
[illegible] Hospital	Gen	County	32	15	9	141	1,644
Evanston, 3,820—Uinta Wyoming State Hospital▲	Ment	State	700	628	..	...	207
Fort Washakie, 150—Fremont Wind River Indian Hospital	Gen	IA	44	13	5	101	565
Francis E. Warren Air Force Base,—Laramie U. S. Air Force Hospital	Gen	Army	397	205	17	292	5,882
Gillette, 2,196—Campbell McHenry Hospital	Gen	Indiv	15	10	6	48	410
Jackson, 1,239—Teton St. John's Hospital▲	Gen	Church	28	11	10	123	967
Kemmerer, 1,659—Lincoln Lincoln County Miner's Hosp.	Gen	NPAssn	25	2	6	89	386
Lander, 3,319—Fremont [illegible]	Gen	Church	20	13	10	175	1,236
[illegible]	Gen	County	85	58	16	524	3,507
Lo[illegible]—Big Horn Lovell Hospital	Gen	Part	22	9	8	145	683
Lusk, 2,078—Niobrara Spencer Hospital	Gen	Indiv	18	12	6	75	1,023
[illegible] Hospital	Gen	Church	24	16	8	187	878
[illegible]	Gen	Church	25	13	12	246	1,273
[illegible]—Carbon Memorial Hospital of Carbon County	Gen	County	48	28	12	323	1,255

WYOMING—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Rock Springs, 10,785—Sweetwater Memorial Hospital of Sweetwater County▲	Gen	County	120	62	17	452	3,248
Sheridan, 11,402—Sheridan Memorial Hospital of Sheridan County▲	Gen	County	83	53	16	380	2,431
Veterans Admin. Hospital▲	Ment	Vet	777	712	..	...	631
[illegible]al Hospital	Gen	NPAssn	40	17	12	323	1,285
Wheatland, 2,280—Platte Wheatland General Hospital▲	Gen	NPAssn	41	27	7	59	1,695
Worland, 4,206—Washakie Washakie Memorial Hospital	Gen	Church	23	16	9	196	1,128

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Greybull, 2,266—Big Horn Greybull Hospital	Gen	City	15	...	4	Estab. 1950	
Hanna, 1,314—Carbon Hanna Hospital	Gen	Corp	11	8	4	51	409
Lander, 3,319—Fremont Wyoming State Training School	MeDe	State	413	406	..	...	22
[illegible]			9	5	4	79	228
[illegible]			40	13	2	6	277

ALASKA

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Anchorage, 3,495 Providence Hospital	Gen	Church	86	69	21	681	3,315
Barrow, 363 Point Barrow Hospital	GenTb	Fed	18	6	4	42	131
Bethel, 376 Alaska Native Service Hospital	Gen	IA	10	...	..	...	...
Cordova, 938 Cordova Community Hospital	Gen	Church	20	10	3	44	318
Fairbanks, 3,455 St. Joseph's Hospital	Gen	Church	58	53	10	394	2,150
Fort Yukon, 274 Hudson Stuck Memorial Hospital▲	Gen	Church	27	16	1	29	142
Juneau, 5,729 Alaska Native Service Hospital	GenTb	IA	55	37	5	42	385
St. Ann's Hospital	Gen	Church	64	44	10	227	1,369
Kanakanak, 133 Alaska Native Service Hospital	Gen	IA	42	32	6	58	412
Ketchikan, 4,695 Ketchikan General Hospital	Gen	Church	75	53	20	200	1,709
Kodiak, 864 Griffin Memorial Hospital	Gen	Church	21	10	6	91	568
U. S. Naval Air Station Infirmary	Gen	Navy	35	18	6	51	725
Kotzebue, 372 Alaska Native Service Hospital	Gen	IA	35	17	..	1	202
Mount Edgecumbe Mount Edgecumbe Medical Center	GenTb	IA	210	201	..	6	317
Nome, 1,559 Maynard-MacDougall Memorial Hospital	Gen	Church	25	16	4	51	352
Palmer, 150 Valley Hospital	Gen	NPAssn	19	6	5	89	609
Petersburg, [illegible]	Gen	City	9	4	4	36	326
[illegible]	Gen	Fed	8	1	3	9	39
Seldovia, [illegible] Seldovia General Hospital	Gen	City	8	1	3	12	100
Seward, 949 Seward General Hospital	Gen	Church	30	11	4	89	714
Seward Sanatorium	TB	Church	150	124	..	...	108
Sitka, 1,987 Pioneers' Home Hospital	Inst	Ter	40	36	..	...	122
Skagway, 634 Pacific and Arctic Railway and Navigation Company Hospital	Gen	NPAssn	8	2	3	26	159
Tanana, 170 Tanana Hospital	Gen	IA	35	30	4..	19	131
Valdez, 529 Valdez Community Hospital	Gen	NPAssn	12	2	2	20	210

CANAL ZONE

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ancon, 1,946 Gorgas Hospital**▲	Gen	Fed	681	522	31	876	9,044
Balboa, 3,922 Palo Seco Leper Colony	Lepro	Fed	140	117	..	...	6
Coco Solo, 56 U. S. Naval Hospital	Gen	Navy	60	52	11	136	1,238
Corozal, 1,370 Corozal Hospital	Ment	Fed	487	370	..	...	168
Cristobal, 826 Colon Hospital	Gen	Fed	168	131	20	586	4,286
Fort Clayton, 3,898 12th Station Hospital	Gen	Army	350	172	15	427	4,777

Key to symbols and abbreviations is on page 124

GUAM

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Agana							
Guam Memorial Hospital	Gen	Ter	300	150	18	344	2,000
U. S. Naval Hospital	Gen	Navy	390	233	13	371	5,093

HAWAII

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ewa, 3,570—Honolulu							
Ewa Plantation Company Hospital	Gen	NPAssn	47	12	5	136	989
Haina,—Hawaii							
Honokaa Plantation Hospital	Gen	NPAssn	30	14	2	60	489
Hana, 293—Maui							
Hana County Hospital	Gen	County	25	9	4	33	291
Hilo, 23,351—Hawaii							
Hilo Memorial Hospital▲	Gen	County	181	122	21	807	5,189
Dr. Z. Matayoshi Hospital	Gen	Indiv	33	6	2	22	286
Oto Hospital	Gen	Indiv	8	3	2	30	227
Puumaile Hospital	TB	County	140	125	..	...	91
Honokaa, 1,069—Hawaii							
Okada Hospital	Gen	Indiv	6	1	4	45	94
Honolulu, 179,359—Honolulu							
Kapiolani Maternity and Gynecological Hospital+	MatGyn	NPAssn	115	78	97	4,037	5,481
Kauikeolani Children's Hospital+▲⊙	Chil	NPAssn	117	65	.	...	2,468
Kuakini Hospital★◇	Gen	NPAssn	120	86	20	569	5,087
Leahi Hospital+▲⊙	TB	NPAssn	606	581	.	...	387
Maluhia Home	Chr	CyCo	267	197	..	...	711
Queen's Hospital★+▲◇	Gen	NPAssn	376	275	41	1,483	11,532
St. Francis Hospital★▲◇	Gen	Church	213	156	42	1,466	7,625
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	28	27	..	...	142
Tripler Army Hospital★+▲	Gen	Army	2,083	815	48	1,619	19,821
Kahuku, 1,505—Honolulu							
Kahuku Hospital▲	Gen	NPAssn	30	13	7	122	462
Kalaupapa,—Kalawao							
Kalaupapa Settlement	Lepro	Ter	600	...	..	...	...
Kaneohe, 112—Honolulu							
Territorial Hospital+	Ment	Ter	1,090	1,088	..	...	509
Kealakekua, 350—Hawaii							
Kona Hospital	Gen	County	50	20	8	153	688
Kealia, 195—Kauai							
Samuel Mahelona Memorial Hospital	TB	Ter	84	79	..	...	39
Kohala, 720—Hawaii							
Kohala County Hospital	Gen	County	50	17	6	97	811
[illegible]							
[illegible]	Gen	County	20	7	6	29	342
[illegible]	TB	County	212	187	..	...	91
Lahaina, 5,217—Maui							
Pioneer Mill Company's Hosp.	Gen	NPAssn	65	42	9	149	1,365
Lanai City, 3,597—Maui							
Lanai City Hospital	Gen	NPAssn	26	5	6	91	376
Laupahoehoe, 430—Hawaii							
Laupahoehoe Sugar Company Plantation Hospital	Gen	NPAssn	27	11	4	85	404
Lihue, 4,272—Kauai							
G. N. Wilcox Memorial Hosp.▲	Gen	NPAssn	94	56	14	526	2,501
Maunaloa,—Maui							
Maunaloa Hospital	Gen	NPAssn	19	2	5	13	179
Molokai, (Hoolehua, P.O.),—Maui							
Molokai Community Hospital	Gen	NPAssn	32	...	5	Estab. 1950	
Paauilo, 1,233—Hawaii							
Hamakua Mill Company Hospital	Gen	NPAssn	11	3	2	14	200
Pahala, 290—Hawaii							
Hawaiian Agricultural Company Hospital▲	Gen	NPAssn	37	18	5	96	570
Pearl City, 1,071—Honolulu							
Hale Mohalu	Lepro	Ter	18	12	..	3	115
Waimano Home	MeDe	Ter	637	649	..	...	669
Pepeekeo, 520—Hawaii							
Pepeekeo Plantation Hospital	Gen	NPAssn	48	23	6	142	930
Puunene, 4,456—Maui							
Puunene Hospital▲	Gen	NPAssn	114	67	19	389	2,359
Wahiawa, 5,420—Honolulu							
Wahiawa General Hospital	Gen	NPAssn	60	25	16	330	1,780
Waialua, 2,532—Honolulu							
Waialua Agricultural Company Ltd. Hospital	Gen	NPAssn	39	16	7	127	531
Wailuku, 7,319—Maui							
Malulani Hospital	Gen	County	88	67	21	375	3,308
Waimea, 2,091—Kauai							
Waimea Hospital▲	Gen	NPAssn	36	26	7	228	950
Waipahu, 6,906—Honolulu							
Oahu Sugar Company Hospital	Gen	NPAssn	49	24	6	147	1,097

PUERTO RICO

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Aguadilla, 13,465—Aguadilla							
Aguadilla District Hospital◇	Gen	Govt	260	194	35	1,430	6,325
Aibonito, 4,103—Guayama							
Aibonito Tuberculosis Hosp.	TB	Govt	100	93	..	...	129
Arecibo, 22,132—Arecibo							
Arecibo District Hospital★◇	Gen	Govt	304	260	34	808	6,454
Clinica Dr. Susoni	Gen	Corp	150	69	8	111	2,159
Bayamon, 14,596—San Juan							
Bayamon District Hospital★+▲◇	Gen	Govt	260	207	35	1,616	6,943
Caguas, 24,378—Guayama							
Clinica San Rafael	Gen	Indiv	60	40	6	85	1,117
Castaner, 3,856—Aguadilla							
Castaner General Hospital	Gen	Church	30	15	7	170	669
Cayey, 5,622—Guayama							
Clinica Font	Gen	Indiv	41	26	..	...	495
Central Aguirre,—Guayama							
Central Aguirre Hospital	Gen	NPAssn	33	17	1	26	658
Fajardo, 7,108—Humacao							
Coomb's Hospital	Gen	Indiv	16	7	4	91	490
Fajardo District Hosp.★▲◇	Gen	Govt	305	211	34	919	5,190
Hato Rey,—San Juan							
Clinica Dr. M. Julia▲⊙	N&M	Corp	375	356	..	..	818
[illegible]	Gen	Indiv	300	65	20	143	3,220
[illegible]							
Beneficencia de Puerto Rico	Gen	NPAssn	120	67	13	211	1,591
Humacao, 7,624—Humacao							
Clinica Font Martelo	Gen	Indiv	100	45	84	15	1,333
Clinica Oriente	Gen	Indiv	79	49	4	29	1,538
[illegible]	Gen	Church	56	31	18	346	1,930
[illegible]							
Mennonite General Hospital	Gen	NPAssn	30	20	5	60	993
[illegible]							
[illegible]	Gen	Indiv	70	14	10	20	1,142
[illegible]	Gen	Indiv	39	22	10	63	510
Tuberculosis Hospital	TB	Govt	200	195	..	...	239
Ponce, 65,179—Ponce							
Clinica Quirurgica Dr. Pila★▲◇	Gen	NPAssn	185	132	12	63	3,758
Hospital Municipal Valentin Tricoche	Gen	City	185	135	14	968	5,930
Hospital Santo Asilo de Damas▲◇	Gen	Church	165	91	24	288	3,171
[illegible]▲	Gen	Church	93	50	14	253	1,932
[illegible]	TB	Govt	300	290	..	...	344
[illegible]							
[illegible]	TB	Corp	105	76	..	...	313
Hospital for the Lepers	Lepro	Govt	80	48	..	...	51
Insular Hospital of Psychiatry	Ment	Govt	1,000	1,565	..	...	428
Insular Tuberculosis Sanatorium▲	TB	Govt	800	801	..	...	741
Salinas, 3,176—Guayama							
Salinas Municipal Hospital	Gen	City	43	15	5	269	1,624
San German, 6,446—Mayaguez							
Hospital de la Concepcion	Gen	Church	64	56	10	355	2,553
San Juan, 169,255—San Juan							
Hospital San Jose	Gen	Corp	80	36	16	135	1,731
Ophthalmic Institute of Puerto Rico	Eye	Corp	60	45	..	...	1,538
Presbyterian Hospital★▲◇	Gen	Church	114	87	22	902	4,401
Puerto Rico Radiotherapy Institute and Oncological Hospital	Cancer	NPAssn	57	48	..	...	1,315
Rodriguez Army Hospital▲	Gen	Army	350	271	22	489	6,503
San Juan City Hospital★+▲◇	Gen	City	386	324	62	3,622	9,941
U. S. Marine Hospital▲	Gen	USPHS	82	60	..	...	1,030
Veterans Admin. Hospital▲	Gen	Vet	200	187	..	...	2,965
Santurce,—San Juan							
Clinica Pereira Leal▲	Gen	Indiv	233	150	20	493	5,782
Hospital Mimiya	Gen	Indiv	100	44	10	19	1,007
Hospital Pavia▲	Gen	Corp	88	63	13	347	2,227
Utuado, 4,430—Arecibo							
[illegible]	Gen	Indiv	70	42	3	5	1,117
[illegible]							
[illegible]	Gen	Indiv	66	40	4	31	1,252

VIRGIN ISLANDS

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Charlotte Amalie, 9,801—St. Thomas Island							
Municipal Hospital◇	Gen	CyCo	111	107	20	360	1,950
Christiansted, 4,495—St. Croix Island							
Christiansted Municipal Hospital◇	Gen	City	74	43	8	118	1,355
St. Croix Hospital for Leprosy	Lepro	City	92	25	..	...	1
Frederiksted, 2,498—St. Croix Island							
Frederiksted Municipal Hosp.	Gen	City	61	42	10	122	1,125

UNITED STATES ARMY HOSPITALS IN THE EUROPEAN AND FAR EAST COMMANDS

The list of Army hospitals in the European and Far East Commands, previously published in the Hospital Number of The Journal, is not included at this time due to the present military situation and security reasons.

SCHOOLS FOR MEDICAL TECHNOLOGISTS

Fifteen years ago the Council on Medical Education and Hospitals published its first list of approved schools or medical technologists. At that time 96 schools were ound to qualify for recognition under the standards stablished jointly by the Council and the American ociety of Clinical Pathologists.

Today 467 schools are approved. This is a net increase f 371 schools in the period from 1936 to the present. n the past year, 44 new schools were approved while 10 hospitals, for varying reasons, discontinued their training programs. In 1936, 701 students were enrolled n the 96 approved schools. The 1950 reports show that 3,312 students are now in training, compared, also, with 3,119 in 1949 and 2,751 in 1948. Many hospitals find t advantageous to train their own technicians—in fact, his frequently becomes necessary in order to assure adequate and qualified personnel in the laboratory department. Possibly with this objective in mind, 75 hospitals paid a stipend to students at some period during heir training; 264 institutions advised that no tuition is harged and an additional 49 reported breakage fees only.

During the past year, 2,011 students were graduated by 391 approved schools. This represents an increase of 291 graduates over the previous year. Included in the 76 schools not reporting were the 44 newly accredited training programs. Approximately 250 hospitals have established college or university affiliation, some hospitals reporting two or more affiliated programs. It will be noted that in many instances college credit is allowed for the period of hospital training.

The standards for approval specify that candidates for admission to approved courses should have had at least two years of college work in a college or university accredited by a recognized standardizing agency. This minimum requirement is in effect in 359 of the approved schools, 46 require a degree, 59 three years of college and the remaining three schools two and one-half to three and one-half years of college training. Prospective students should keep in mind that only graduates of approved schools are eligible for examination by the Board of Registry of Medical Technologists. The standards of this board are endorsed by the American Medical Association, the American College of Surgeons, the American Hospital Association, the Catholic Hospital Association and others.

The Essentials of an Acceptable School for Medical Technologists revised in December 1949, also specify that the course of training should be not less than twelve months in duration. Of the 467 schools approved 398 have organized their training programs on this minimum requirement; the length of training in the other 69 schools varies from 13 months to three years. By referring to the accompanying list it will be noted that 46 of the approved schools are in Pennsylvania, 36 in Ohio, 29 in Michigan and 24 each in Illinois and New York. In the other states the number of schools varies from 1 to 22.

In 1949 a Board of Schools of Medical Technology was formed by the American Society of Clinical Pathologists to serve in an advisory capacity to the Council on Medical Education and Hospitals in matters relating to standards and educational programs in this field. The Essentials of an Acceptable School for Medical Technologists have since been revised and the Council and the Board of Schools are currently cooperating in a questionnaire survey planned as an initial step in the reevaluation of the approved laboratory schools. Nearly all of the schools have completed the questionnaire and some of the information has already been tabulated. Additional statistical analyses will be made, however, so that complete data may be available in the further appraisal of individual schools. It is anticipated, also, that at a later date many of the educational programs will again be reviewed through a regular visit of inspection. In this connection, it may be noted that the Board of Schools of Medical Technology is likewise cooperating with the Council in the evaluation of new applications. By this cooperative method every effort is being made to insure that student personnel will receive adequate training in full compliance with existing standards.

Application for approval of a school for medical technologists should be made to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10. Forms will be supplied for this purpose on request. They should be completed by the administrator of the institution requesting this approval. Inquiries regarding the registration of qualified medical technologists should be addressed to the Registry of Medical Technologists, 700 South Council Street, Muncie, Indiana.

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS

Council on Medical Education and Hospitals of the American Medical Association

NOTE: Under "Tuition" the letter B indicates that a breakage fee is charged; the letter U indicates university fees. Students lacking the scholastic requirements should contact the registrar of the college or university and not the hospital. Those who wish to enroll in a course given by the college or university or who desire to transfer their credits should correspond with the registrar and not the hospital. Asterisk (*) after name of school indicates that male as well as female students are admitted.

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Prerequisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
ALABAMA							
Baptist Hospital, Birmingham *..................	Alabama Coll.†; Howard Coll.† Alabama Polytechnic Institute †.......	A. E. Casey, M.D.........	2 yrs.	12	7	Varies	None [1]
Carraway Methodist Hospital, Birmingham *...	....	J. A. Cunningham, M.D...	2 yrs.	12	6	JanJune	None
Jefferson-Hillman Hospital, Birmingham *......	University of Alabama †..............	W. H. Riser Jr., M.D.....	3 yrs.	12	18	JuneSept	B
South Highlands Infirmary, Birmingham *......	....	J. A. Cunningham, M.D...	2 yrs.	12	4	JanSept	None [1]

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Prerequisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
ALABAMA—Continued							
Lloyd Noland Hospital, Fairfield *		J. A. Cunningham, M.D.	2 yrs.	12	6	JulySept	None[1]
Holy Name of Jesus Hospital, Gadsden *	Jacksonville State Teachers Coll.†	J. D. Bush, M.D.	2 yrs.	12	4	JanJune	None[1]
Mobile Infirmary, Mobile		I .M. Wise, M.D.	2 yrs.	12	2	Varies	None[1]
St. Margaret's Hospital, Montgomery		C. R. Lafferty, M.D.	3 yrs.	12	2	MarSept	None[1]
Druid City Hospital, Tuscaloosa	University of Alabama	J. S. P. Beck Sr., M.D.	2 yrs.	12	4	Sept	None[1]
ARIZONA							
Good Samaritan Hospital, Phoenix *	Arizona State College, Tempe †	H. Wood, M.D.	2 yrs.	12	5	July	$50
St. Joseph's Hospital, Phoenix *	Arizona State College, Tempe †	O. O. Williams, M.D.	3 yrs.	12	5	July	B
St. Monica's Hospital, Phoenix *	Arizona State College, Tempe †	M. Rosenthal, M.D.	3 yrs.	12	2	FebJuly	$50
ARKANSAS							
St. Michael's Hospital, Texarkana *	Texarkana College	R. H. Chappell, M.D.	2 yrs.	12	4	JanJuly	$100
CALIFORNIA							
Herrick Memorial Hospital, Berkeley *		H. R. Fishback, M.D.	Degree	12	2	FebJune	None[1]
Childrens Hospital, Los Angeles		R. E. Knutti, M.D.	Degree	12	3	Varies	None
Los Angeles County Hospital, Los Angeles *		E. M. Butt, M.D.	Degree	14	20	Varies	None[1]
St. Vincent's Hospital, Los Angeles *		R. Shoemaker, M.D.	Degree	12	4	July	B[1]
Veterans Admin. Center, Los Angeles *	Mount St. Mary's College, Los Angeles †; Univ. of California	L. Kaplan, M.D.	2 yrs.	12	15	July	None
White Memorial Hospital, Los Angeles *	College of Medical Evangelists †	O. B. Pratt, M.D.	3 yrs.	15	20	Quarterly	$120
Collis P. and Howard Huntington Memorial Hospital, Pasadena *		A. G. Foord, M.D.	Degree	12	10	July	B
Mercy Hospital, San Diego *		D. A. De Santo, M.D.	2 yrs.	12-36	3	JanJuly	None[1]
Letterman Army Hospital, San Francisco *	San Jose State College †	K. F. Ernst, M.D.	3 yrs.	12	6	June	None
Univ. of California School of Medicine, San Francisco *	University of California, Berkeley	J. Hopper Jr., M.D.	3 yrs.	12	18	FebSept	$105
Santa Clara County Hospital, San Jose *		D. J. Stump, M.D.	Degree	12	2	Varies	None[1]
Santa Barbara Cottage Hosp., Santa Barbara		E. L. Benjamin, M.D.	Degree	12	2	July	None
St. John's Hospital, Santa Monica *		G. J. Hummer, M.D.	Degree	12	2	July	None[1]
COLORADO							
Glockner-Penrose Hospital, Colorado Springs *	College of Mt. St. Joseph on the Ohio	E. F. Geever, M.D.	2 yrs.	12	4	Sept	None
St. Francis Hospital, Colorado Springs *	Adams State Teachers Coll., Alamosa	E. F. Geever, M.D.	2 yrs.	12	4	Sept	None
Colorado General Hospital, Denver *	University of Colorado †	E. R. Mugrage, M.D.	3 yrs.	12	24	Summer	U & B
Denver General Hospital, Denver *		Affiliated with Colorado General Hospital					
Mercy Hospital, Denver *	University of Denver †; Loretto Heights College †	A. W. Freshman, M.D.	3 yrs.	12	3	Quarterly	U & B
St. Anthony Hospital, Denver *	University of Denver †; Loretto Heights College †	A. W. Freshman, M.D.	3 yrs.	12	4	Quarterly	U & B
St. Joseph's Hospital, Denver *	St. Mary's College, Xavier, Kan.	E. I. Dobos, M.D.	3 yrs.	12	2	July	No
Colorado State Hospital, Pueblo *		M. Gallavan, M.D.	2 yrs.	12	6	JanJuly	No
CONNECTICUT							
Danbury Hospital, Danbury *		P. T. McIlroy, M.D.	2 yrs.	18	3	Varies	No
Hartford Hospital, Hartford *		R. E. Kendall, M.D.	2 yrs.	12	4	Sept	No
St. Francis Hospital, Hartford *		L. P. Hastings, M.D.	2 yrs.	12	3	JanJuly	No
Middlesex Hospital, Middletown *		C. E. McLeod, M.D.	2 yrs.	12	2	Oct	No
New Britain General Hospital, New Britain *		P. D. Rosahn, M.D.	Degree	12	5	Oct	No
Hospital of St. Raphael, New Haven *		R. R. Nesbit, M.D.	2 yrs.	12	4	Sept	No
Norwalk Hospital, Norwalk *		R. N. Barnett, M.D.	2 yrs.	12	3	Oct	$50
Stamford Hospital, Stamford		J. G. Snavely, M.D.	2 yrs.	12	6	July	$50
Charlotte Hungerford Hospital, Torrington *		L. Opper, M.D.	2 yrs.	12	2	Varies	No
St. Mary's Hospital, Waterbury *		M. E. Cox, M.D.	2 yrs.	14	3	July	B
Waterbury Hospital, Waterbury *		J. O. Collins, M.D.	2 yrs.	12	3	Oct	....
DELAWARE							
Delaware Hospital, Wilmington *	University of Delaware †	J. W. Howard, M.D.	2 yrs.	12	4	July	$100
Memorial Hospital, Wilmington *	University of Delaware †	J. W. Abbiss, M.D.	3 yrs.	12	2	July	$100
Wilmington General Hospital, Wilmington *	University of Delaware †	J. V. Casella, M.D.	2 yrs.	12	3	July	Non
DISTRICT OF COLUMBIA							
Doctors Hospital, Washington *	American University †	O. B. Hunter, M.D.	2 yrs.	12	6	Quarterly	B
Garfield Memorial Hospital, Washington *		E. C. Rice, M.D.	2 yrs.	12	8	FebSept	Non
Georgetown University Hospital, Washington *	Georgetown University †	C. F. Geschickter, M.D.	Degree	12	8	Sept	$100
George Washington Univ. Hospital, Washington	George Washington Univ. Med. School	T. M. Peery, M.D.	2 yrs.	12	10	FebSept	Non
Providence Hospital, Washington		H. H. Leffler, M.D.	2 yrs.	12	5	Oct	Non
Sibley Memorial Hospital, Washington *	American University †	O. B. Hunter, M.D.	2 yrs.	12	8	Quarterly	Non
FLORIDA							
Florida State Hospital, Chattahoochee *	Florida State University †	R. Mosteller, M.D.	2 yrs.	12	4	JanSept	Non
Duval Medical Center, Jacksonville	Florida State University †	L. Y. Dyrenforth, M.D.	2 yrs.	12	4	JanJuly	Non
St. Luke's Hospital, Jacksonville *		J. E. Wallace, M.D.	2 yrs.	12	8	Sept	Non
St. Vincent's Hospital, Jacksonville	Florida State University	N. A. Murray, M.D.	Degree	12	2	July	Non
Jackson Memorial Hospital, Miami *		P. R. Rezek, M.D.	Degree	12	9	Monthly	Non
Escambia General Hospital, Pensacola *		G. V. Squires, M.D.	2 yrs.	12	4	Oct	Non
GEORGIA							
Crawford W. Long Memorial Hospital, Atlanta *		D. Ayer, M.D.	2 yrs.	12	4	Varies	Non
Georgia Baptist Hospital, Atlanta *		J. Funke, M.D.	2 yrs.	12	2	JanJuly	Non
Grady Memorial Hospital, Atlanta *	Emory University School of Medicine	E. E. Mandel, M.D.	2 yrs.	18	12	Varies	Non
Piedmont Hospital, Atlanta	Emory University School of Medicine	W. B. Matthews, M.D.	Degree	12	4	JuneSept	Non
St. Joseph's Infirmary, Atlanta		W. B. Matthews, M.D.	Degree	12	4	JuneSept	Non
University Hospital, Augusta *	Medical College of Georgia	W. L. Shepeard, M.D.	2 yrs.	12	4	Sept	$10
Veterans Admin. Hospital, Chamblee *	Emory University School of Medicine	C. M. Whorton, M.D.	2 yrs.	12	6	Quarterly	Non
Columbus City Hospital, Columbus *		A. R. Monaco, M.D.	2 yrs.	12	4	Varies	Non
Emory University Hospital, Emory University *	Emory University	W. Sheldon, M.D.	2 yrs.	12	11	JanSept	Non
St. Joseph's Hospital, Savannah		L. Howard, M.D.	2 yrs.	12	4	Oct	Non
IDAHO							
St. Luke's Hospital, Boise *		J. C. McCarter, M.D.	2 yrs.	12	6	Monthly	Non
Idaho Falls Latter-Day Saints Hospital, Idaho Falls *	Ricks College, Rexburg	J. A. Williams, M.D.	2 yrs.	12	2	Varies	Non
ILLINOIS							
Copley Memorial Hospital, Aurora *	Aurora College †	P. T. Dolan, M.D.	3 yrs.	12	3	Varies	Non
St. Joseph's Hospital, Bloomington *	Illinois State Normal; DePaul Univ.	B. Markowitz, M.D.	2 yrs.	12	8	Varies	$50
Alexian Bros. Hospital, Chicago *	DePaul University	J. P. Simonds, M.D.	2 yrs.	12	3	Varies	Non
City of Chicago Municipal Tuberculosis Sanitarium, Chicago *	Roosevelt College †	J. R. Thompson, M.D.	2 yrs.	12	10	Quarterly	B
Grant Hospital, Chicago		C. C. Mason, M.D.	2 yrs.	18	3	Varies	$50

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Pre-requisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
LLINOIS—Continued							
Michael Reese Hospital, Chicago *	Roosevelt College †	O. Saphir, M.D.	2 yrs.	18	18	Every 2 mo.	$150
Mount Sinai Hospital, Chicago *	Roosevelt College †	I. Davidsohn, M.D.	2 yrs.	12-18	12	Monthly	$150
Northwestern University Medical School, Chicago	Northwestern Univ. Medical School	O. E. Hepler, M.D.	2 yrs.	12-20	13	Monthly	$175-225
Norwegian-American Hospital, Chicago *		A. Learner, M.D.	2 yrs.	12-18	4	Monthly	$100 yr.
Ravenswood Hospital, Chicago *		H. I. Brown, M.D.	2 yrs.	12	6	Varies	None
St. Bernard's Hospital, Chicago *	Loyola University †	C. S. Hagerty, M.D.	2 yrs.	12	8	Sept	$125
St. Mary of Nazareth Hospital, Chicago *		E. W. Thurston, M.D.	2 yrs.	12	4	AprOct	$175 B
Wesley Memorial Hospital, Chicago *	Northwestern University	T. C. Laipply, M.D.	2 yrs.	12	24	Monthly	$175
Evanston Hospital, Evanston *	Northwestern University	H. G. Davis Jr., M.D.	2 yrs.	12	6	JanOct	None
St. Francis Hospital, Evanston *		J. W. Henry, M.D.	2 yrs.	12	6	Monthly	$50
Methodist Hospital of Central Illinois, Peoria *		D. O. Manshardt, M.D.	2 yrs.	12	6	Quarterly	$50 B
St. Francis Hospital, Peoria *		J. E. Kraus, M.D.	2 yrs.	12	6	Sept	$100 B
St. Mary's Hospital, Quincy *		F. Mayner, M.D.	2 yrs.	12	4	Sept	$100
Rockford Memorial Hospital, Rockford		G. B. Kramer, M.D.	2 yrs.	12	..	Varies	None
St. Anthony's Hospital, Rockford *		A. R. K. Matthews, M.D.	2 yrs.	12	8	Varies	$50
Swedish-American Hospital, Rockford		G. B. Kramer, M.D.	2 yrs.	12	..	Quarterly	None
Memorial Hospital, Springfield *		F. J. Raisch, M.D.	2 yrs.	12	6	FebSept	$100
St. John's Hospital, Springfield		H. M. Steen, M.D.	2 yrs.	12	12	Sept	$50 [1]
St. Therese's Hospital, Waukegan		G. J. Rukstinat, M.D.	2 yrs.	12	4	Sept	$100 B
INDIANA							
Protestant Deaconess Hospital, Evansville *	Evansville College †	F. E. Mills, M.D.	2 yrs.	12	4	Varies	$125
St. Mary's Hospital, Evansville	Evansville College †	F. W. Porro, M.D.	2 yrs.	12	5	Varies	None
Lutheran Hospital, Fort Wayne *		W. D. Griest, M.D.	2 yrs.	12	2	Varies	None
St. Joseph Hospital, Fort Wayne *		S. M. Rabson, M.D.	2 yrs.	12	4	Spring	None
ndiana University Med. School, Indianapolis *	Indiana University, Bloomington †	J. L. Arbogast, M.D.	3 yrs.	12	24	June	U
Methodist Hospital, Indianapolis	Butler University †; Franklin Coll.†	L. H. Hoyt, M.D.	Degree	12	4	Quarterly	$50
St. Elizabeth Hospital, Lafayette *		J. M. McFadden, M.D.	Degree	12	10	Oct	$100 B
South Bend Medical Foundation (Memorial and St. Joseph Hospitals), South Bend *		A. S. Giordano, M.D.	2 yrs.	18	8	JanJuly	$125 yr.
St. Anthony's Hospital, Terre Haute *	Indiana State Teachers College	L. L. Blum, M.D.	2 yrs.	12	4	Monthly	$75
IOWA							
Mercy Hospital, Cedar Rapids		R. E. Weland, M.D.	2 yrs.	12	5	FebJuly	None
St. Luke's Methodist Hospital, Cedar Rapids *	Coe College †	F. O. Tucker, M.D.	2 yrs.	12	4	JanJuly	None [1]
Mercy Hospital, Council Bluffs *		A. S. Rubnitz, M.D.	2 yrs.	12	4	Varies	B
Mercy Hospital, Davenport	Marycrest College †	W. S. Pheteplace, M.D.	2 yrs.	12	5	Varies	$50
Mercy Hospital, Des Moines *		F. O. Coleman, M.D.	2 yrs.	12	5	July	None [1]
Finley Hospital, Dubuque *	University of Dubuque †	E. T. Thorsness, M.D.	2 yrs.	12	4	July	None
St. Joseph Mercy Hospital, Dubuque *		E. T. Thorsness, M.D.	2 yrs.	12	6	Sept	None
St. Joseph Mercy Hospital, Sioux City *	Briar Cliff College †	E. A. Fullgrabe, M.D.	2 yrs.	12	4	Sept	None
KANSAS							
Grace Hospital, Hutchinson *		L. G. Murphy, M.D.	2 yrs.	12	2	JuneSept	B
St. Elizabeth Mercy Hospital, Hutchinson *		L. C. Murphy, M.D.	2 yrs.	12	2	Every 6 mo.	None [1]
Bethany Hospital, Kansas City		W. W. Summerville, M.D.	2 yrs.	12	6	Monthly	None [1]
Providence Hospital, Kansas City *	St. Mary's College, Xavier, Kan.	V. B. Buhler, M.D.	Degree	12	5	FebJuly	None [1]
University of Kansas Med. Center, Kansas City *	University of Kansas	L. H. Leger, M.D.	Degree	12	24	July	None [1]
Lattimore-Fink Laboratories (St. Francis, Stormont-Vail and Santa Fe Hospitals), Topeka *	Washburn University †	J. L. Lattimore, M.D.	2 yrs.	12	8	JanJune	None [1]
Veterans Admin. Center, Wadsworth *		M. L. Jones, M.D.	2 yrs.	15	..	Varies	None
St. Francis Hospital, Wichita *	University of Wichita †	W. P. Callahan Jr., M.D.	2 yrs.	12	10	FebJune	None
Veterans Admin. Center, Wichita *		R. H. Crary, M.D.	Degree	12	2	Varies	None
Wichita Hospital, Wichita *		W. J. Reals, M.D.	2 yrs.	12	6	MayOct	B
KENTUCKY							
St. Elizabeth Hospital, Covington *		R. J. Ritterhoff, M.D.	3 yrs.	12	5	July	......
Good Samaritan Hospital, Lexington *	University of Kentucky †	E. S. Maxwell, M.D.	3 yrs.	18	30	Varies	U
St. Joseph Hospital, Lexington *	Nazareth College, Louisville	E. S. Maxwell, M.D.	2 yrs.	12	5	JuneSept	$75
Kentucky State Department of Health, School of Laboratory Technic, Louisville *		L. H. South, M.D.	2 yrs.	12	38	JuneSept	$300
Norton Memorial Infirmary, Louisville *		M. L. Barnes, M.D.	2 yrs.	12	8	Quarterly	$150
St. Anthony Hospital, Louisville	Ursuline College	P. W. Cummings, M.D.	2 yrs.	12	4	June	None
St. Joseph Infirmary, Louisville	Nazareth College	S. H. Black, M.D.	3½ yrs.	12	8	JulySept	$75
SS. Mary and [illegible]	Nazareth College †	S. H. Black, M.D.	2 yrs.	12	4	JuneSept	$120
Veterans Admi[illegible]	University of Louisville	H. Gordon, M.D.	2 yrs.	12	8	July	None
LOUISIANA							
Baton Rouge General Hospital, Baton Rouge *		S. H. Colvin Jr., M.D.	2 yrs.	12	8	FebJuly	None
St. Francis Sanitarium, Monroe	Northeast Louisiana State College †	N. Klam, M.D.	2 yrs.	12	8	JanSept	None
Charity Hospital of Louisiana, New Orleans *		E. S. Moss, M.D.	Degree	12	28	Monthly	None
Hotel Dieu, Sisters' Hospital, New Orleans *	Loyola University †	R. M. Hartwell, M.D.	3 yrs.	12	7	June	None
Mercy Hospital-Soniat Memorial, New Orleans *	Loyola University †	G. H. Hauser, M.D.	Degree	12	10	Varies	None
Sara Mayo Hospital, New Orleans	Loyola University †	W. H. Harris Jr., M.D.	3 yrs.	12	4	June	None [1]
Southern Baptist Hospital, New Orleans	Northwestern State College †	E. H. Lawson, M.D.	2 yrs.	14	10	Quarterly	None [1]
Touro Infirmary, New Orleans *	Loyola University †	A. J. Hertzog, M.D.	3 yrs.	12	6	Varies	None
U. S. Marine Hospital, New Orleans *	Loyola University †	L. L. Swan, M.D.	2 yrs.	12	5	June	None
T. E. Schumpert Memorial Sanit., Shreveport *	Northwestern State College †	W. P. Butler, M.D.	2 yrs.	12	6	FebSept	$50
Shreveport Charity Hospital, Shreveport *	Northwestern State College †	W. R. Mathews, M.D.	2 yrs.	12	6	JanSept	None
MAINE							
Eastern Maine General Hospital, Bangor *	University of Maine †	R. C. Wadsworth, M.D.	3 yrs.	18	6	July	$150
Central Maine General Hospital, Lewiston *		C. F. Branch, M.D.	2 yrs.	12	12	JanJuly	$150
Maine General Hospital, Portland		J. E. Porter, M.D.	2 yrs.	12	8	July	None
MARYLAND							
Mercy Hospital, [illegible]	Mount St. Agnes College †	H. T. Collenberg, M.D.	2 yrs.	21	24	Sept	U
St. Joseph's [illegible]		H. Wollenweber, M.D.	2 yrs.	12	7	JanSept	B
Union Memor[illegible]		W. C. Merkel, M.D.	2 yrs.	12	5	Sept	$150
MASSACHUSETTS							
Beverly Hospital, Beverly		D. E. Brown, M.D.	2 yrs.	12	2	Varies	None
Faulkner Hospital, Boston *	Colby Junior College, New London, N. H.†	P. M. LeCompte, M.D.	3 yrs.	12	2	Sept	None
Massachusetts Memorial Hospitals, Boston	Simmons College †	R. Osgood, M.D.	2 yrs.	12	12	Varies	None
New England Deaconess Hospital, Boston		S. Warren, M.D.	2 yrs.	12-16	5	JulyOct	None
New England Hospital, Boston	Colby Junior College †	G. L. Muller, M.D.	2 yrs.	12	4	JulySept	B
Truesdale Hospital, Fall River *		W. Freeman, M.D.	2 yrs.	12	4	Quarterly	None
Burbank Hospital, Fitchburg		H. J. Sparling Jr., M.D.	2 yrs.	12	2	July	None
Holyoke Hospital, Holyoke *	University of Massachusetts †	J. S. Grewal, M.D.	Degree	12	6	July	None [1]
Lawrence General Hospital, Lawrence *		L. S. Jolliffe, M.D.	2 yrs.	12	4	JulyOct	None

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Pre-requisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
MASSACHUSETTS—*Continued*							
St. Luke's Hospital, New Bedford		V. Kiarsis, M.D.	2 yrs.	12	6	JanJuly	None
Newton-Wellesley Hospital, Newton Lower Falls *		D. Skinner, M.D.	2 yrs.	12	4	JulyOct	None[1]
St. Luke's Hospital, Pittsfield		E. F. Joslin, M.D.	2 yrs.	12-15	4	FebSept	B
Quincy City Hospital, Quincy *	Eastern Nazarene College †	O. J. Pollack, M.D.	3 yrs.	16-18	6	Monthly	None
Salem Hospital, Salem *		D. A. Nickerson, M.D.	2 yrs.	12	4	Sept	None
Mercy Hospital, Springfield		J. Rini, M.D.	2 yrs.	12	8	Quarterly	None
Springfield Hospital, Springfield *		W. Kaufmann, M.D.	2 yrs.	12	4	Quarterly	None
Taunton State Hospital, Taunton *		C. C. Van Winkle, M.D.	2 yrs.	12	2	July	None
Tewksbury State Hospital and Infirmary, Tewksbury		H. S. Glidden, M.D.	2 yrs.	12	4	Varies	None
Worcester City Hospital, Worcester		F. K. Fite, M.D.	2 yrs.	12	6	Monthly	None
Worcester State Hospital, Worcester *		W. Jetter, M.D.	2 yrs.	12	4	JanJuly	None
MICHIGAN							
University Hospital, Ann Arbor *	University of Michigan †	O. T. Mallery Jr., M.D.	3 yrs.	12	20	June	U
Leila Y. Post Montgomery Hosp., Battle Creek *	Michigan State College †	A. A. Humphrey, M.D.	2 yrs.	12	6	July	None
Mercy Hospital, Bay City		W. G. Gamble Jr., M.D.	2 yrs.	12	3	Every 6 mo.	None
Veterans Admin. Hospital, Dearborn *	Wayne University †	J. L. Chason, M.D.	3 yrs.	12	3	July	None
City of Detroit Receiving Hospital, Detroit	Wayne University †	O. A. Brines, M.D.	3 yrs.	12	12	July	$100
Detroit Memorial Hospital, Detroit	Wayne University †	H. J. Linn, M.D.	2 yrs.	12	7	July	$100
Evangelical Deaconess Hospital, Detroit *		M. E. Maun, M.D.	2 yrs.	12	6	Quarterly	None
Grace Hospital, Detroit *		C. I. Owen, M.D.	2 yrs.	12	16	Varies	None
Henry Ford Hospital, Detroit		F. W. Hartman, M.D.	Degree	18	16	Monthly	None
Jennings Memorial Hospital, Detroit *		M. E. Maun, M.D.	2 yrs.	12	6	Quarterly	None
Mount Carmel Mercy Hospital, Detroit		*L. W. Gardner, M.D.*	*3 yrs.*	*12*	*12*	*Sept*	*$150*
Providence Hospital, Detroit *	Wayne Univ.†; Siena Heights Coll.†	D. H. Kaump, M.D.	2 yrs.	12	14	*Varies*	$100
St. Joseph Mercy Hospital, Detroit *		M. E. Maun, M.D.	2 yrs.	12	5	Quarterly	None
Woman's Hospital, Detroit		D. C. Beaver, M.D.	3 yrs.	12	12	July	$100
Wayne County Gen. Hosp. and Infirmary, Eloise	Michigan State College †	S. E. Gould, M.D.	3 yrs.	12	12	Quarterly	None
Hurley Hospital, Flint *	Michigan State College †	R. J. Jermstad, M.D.	3 yrs.	12	4	July	None
St. Joseph Hospital, *Flint* *	*Michigan State Coll.†; Michigan Coll.* of Mining †; Central Michigan Coll.†	G. R. Backus, M.D.	3 yrs.	12	4	July	None
Blodgett Memorial Hospital, Grand Rapids *	Michigan State College †	C. A. Payne, M.D.	2 yrs.	12	4	Monthly	None
Butterworth Hospital, Grand Rapids *	Michigan State Coll.†; *Calvin Coll.*†; Western Michigan Coll.†	P. A. Van Pernis, M.D.	2 yrs.	12	10	July	None
St. Mary's Hospital, Grand Rapids *	Aquinas Coll.†; Michigan State Coll.†	E. F. Ducey, M.D.	2 yrs.	12-15	4	JuneSept	None
Mercy Hospital, Jackson		J. H. Ahronheim, M.D.	Degree	12	2	Varies	$25
Borgess Hospital, Kalamazoo *		A. De Groat, M.D.	2 yrs.	12	3	July	None
Bronson Methodist Hospital, Kalamazoo *	Western Michigan College †; Michigan *State College* †	*H. R. Prentice, M.D.*	2 yrs.	12	7	JulySept	*B*
Edward W. Sparrow Hospital, Lansing	Michigan State College †; Western Michigan College †	C. E. Black, M.D.	3 yrs.	12	6	July	None
Michigan Department of Health, Division of Laboratories, Lansing *	[2]	H. E. Cope, M.D.	3 yrs.	12	30	Varies	None
St. Lawrence Hospital, Lansing *	Michigan State College †	L. W. Walker, M.D.	3 yrs.	12	4	Varies	None
Hackley Hospital, Muskegon *		H. L. Clark, M.D.	2 yrs.	12	5	Varies	None
Port Huron Hospital, Port Huron *		L. E. Dickelman, M.D.	2 yrs.	12	3	Sept	None
Saginaw General Hospital, Saginaw	Michigan State College †	Robert Bucklin, M.D.	2 yrs.	12	4	JanJuly	None
MINNESOTA							
St. Luke's Hospital, Duluth *	Mich. State Coll.†; Hamline Univ.†; Univ. of Minnesota †; Wisconsin State Teachers Coll., Superior †	A. H. Wells, M.D.	2 yrs.	18	6	JanJuly	None
St. Mary's Hospital, Duluth *	College of St. Scholastica †	W. V. Knoll, M.D.	2 yrs.	12	12	JanJuly	$75 *B*
Minneapolis General Hospital, Minneapolis		J. I. Coe, M.D.	Degree	12	21	Varies	None
Swedish Hospital, Minneapolis *	Gustavus Adolphus College †; South Dakota State College †	A. R. Jay, M.D.	2 yrs.	12	12	Varies	$125
University of Minnesota Hospital, Minneapolis *	University of Minnesota †	G. T. Evans, M.D.	3 yrs.	12	60	Quarterly	U
St. Cloud Hospital, St. Cloud *		T. R. Simon, M.D.	2 yrs.	12-18	6	Varies	$75
Ancker Hospital, St. Paul *		J. F. Noble, M.D.	3 yrs.	12	6	July	None
Charles T. Miller Hospital, St. Paul	Macalester College †	K. Ikeda, M.D.	3 yrs.	12	12	FebJuly	None
MISSISSIPPI							
Mississippi Baptist Hospital, Jackson *		F. G. Bratley, M.D.	2 yrs.	12	6	Varies	None
Mercy Hospital-Street Memorial, Vicksburg *	Mississippi State College †	R. H. Fenstermacher, M.D.	2 yrs.	12	10	Varies	B
MISSOURI							
St. Louis County Hospital, Clayton		W. G. Brown, M.D.	2 yrs.	12	8	JulySept	None
Kansas City General Hosp. No. 1, Kansas City *		V. B. Buhler, M.D.	2 yrs.	12-18	18	Varies	None[1]
Kansas City General Hosp. No. 2, Kansas City *		V. B. Buhler, M.D.	Students trained at K. C. Gen. Hosp. No 1				
Menorah Hospital, Kansas City *		H. Cohen, M.D.	2 yrs.	12	6	Varies	None[1]
Research Hospital, Kansas City	Missouri Valley College †	H. K. B. Allebach, M.D.	2 yrs.	12	10	Monthly	None[1]
St. Joseph Hospital, Kansas City		R. W. Kerr, M.D.	Degree	12	18	Monthly	B[1]
St. Luke's Hospital, Kansas City	Missouri Valley College †	F. C. Helwig, M.D.	2 yrs.	15	12	*Monthly*	None[1]
St. Mary's Hospital, Kansas City *		A. Lapi, M.D.	Degree	12	8	Varies	B
Trinity Lutheran Hospital, Kansas City		J. H. Hill, M.D.	Degree	12	2	Varies	None
Barnes Hospital, St. Louis *	*Washington Univ. School of Medicine*	G. J. Dammin, M.D.	2 yrs.	12	12	Sept	$100
Homer G. Phillips Hospital, St. Louis *		J. A. Saxton Jr., M.D.	2 yrs.	18	6	FebSept	None
St. Louis City Hospital, St. Louis *		J. A. Saxton Jr., M.D.	2 yrs.	15	8	Quarterly	None
St. Louis Univ. School of Nursing, St. Louis *	St. Louis University †	G. O. Brown, M.D.	3 yrs.	12	32	Sept	$175
Burge Hospital, Springfield *	Drury College †	E. B. Hanan, M.D.	2 yrs.	12	6	MayOct	B
MONTANA							
St. Vincent's *Hospital, Billings* *	*Carroll College, Helena* †	M. E. Martin, M.D.	3 yrs.	12	5	Sept	B
Murray Hospital, Butte *	University of Montana †; Montana State College †	R. F. Peterson, M.D.	3 yrs.	12	4	Varies	None[1]
Columbus Hospital, Great Falls *	College of Great Falls †	J. T. Fallon, M.D.	2 yrs.	12	4	Quarterly	None
Montana Deaconess Hospital, Great Falls *	Montana State Coll.†; Coll. of Education †	E. Hildebrand, M.D.	3 yrs.	12	5	JanJuly	None
NEBRASKA							
Bryan Memorial Hospital, Lincoln *	Nebraska Wesleyan University †	F. H. Tanner, M.D.	2 yrs.	12	8	Varies	B
Lincoln General Hospital, Lincoln *		F. H. Tanner, M.D.	2 yrs.	12	6	Quarterly	None
Bishop Clarkson Memorial Hospital, Omaha *		M. Foster, M.D.	2 yrs.	12	6	Varies	$25
Creighton Memorial St. Joseph's Hosp., *Omaha* *	*Creighton University †; Duchesne* College †	B. C. Russum, M.D.	3 yrs.	12	8	Quarterly	$100
University of Nebraska Hospital, Omaha *	Univ. of Nebraska College of Med.†	J. P. Tollman, M.D.	2 yrs.	12	16	JuneAug	$90
NEVADA							
St. Mary's Hospital, Reno	University of Nevada †	L. Parsons, M.D.	3 yrs.	18	2	Varies	None[1]

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Prerequisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
NEW HAMPSHIRE							
Concord Hospital, Concord *	University of New Hampshire	J. H. Park, M.D.	2 yrs.	12	2	Varies	None
Mary [illegible] l, Hanover	University of New Hampshire †	R. E. Miller, M.D.	2 yrs.	12	10	Varies	B
Elliott [illegible]	University of New Hampshire †	S. M. Brooks, M.D.	2 yrs.	12	2	July	B
Notre [illegible] Manchester *	Rivier College †	R. E. Biron, M.D.	2 yrs.	15	2	JanJuly	B
Sacred Heart Hospital, Manchester		R. E. Biron, M.D.	2 yrs.	12	3	JulyOct	None
NEW JERSEY							
Atlantic City Hospital, Atlantic City *		M. Ackerman, M.D.	2 yrs.	12	6	July	$75
West Jersey Hospital, Camden *		W. R. Platt, M.D.	2 yrs.	12	8	Quarterly	$150 B
Englewood Hospital, Englewood *		I. A. Gaspar, M.D.	2 yrs.	12	4	Varies	None
Hospital of St. Barnabas and for Women and Children, Newark *	Rutgers University †	W. G. Bernhard, M.D.	2 yrs.	12	4	Sept	$200
Newark Beth Israel Hospital, Newark *	Rutgers University †	L. M. Goldman, M.D.	3 yrs.	12	12	Sept	B
Presbyterian Hospital, Newark *	Rutgers University †	S. A. Goldberg, M.D.	3 yrs.	12	4	Sept	U
St. Michael's Hospital, Newark *		S. J. Rose, M.D.	2 yrs.	12	2	Sept	$150
St. Mary Hospital, Passaic *	Fairleigh Dickinson College †	R. Brill, M.D.	2 yrs.	12	2	JuneSept	None
Paterson General Hospital, Paterson *	Fairleigh Dickinson College †	A. H. Davis, M.D.	2 yrs.	12	4	Quarterly	None
Mercer Hospital, Trenton *		T. K. Ruthmell, M.D.	2 yrs.	18	3	Varies	$150
NEW YORK							
Bender School of Medical Technology, Albany *	Union University †	J. J. Clemmer, M.D.	2 yrs.	18	16	Sept	$200
Binghamton City Hospital, Binghamton *		V. W. Bergstrom, M.D.	2 yrs.	12	4	Quarterly	None
Jewish Hospital, Brooklyn *		D. M. Grayzel, M.D.	Degree	18	6	Quarterly	None
Prospect Heights Hospital, Brooklyn *		S. H. Polayes, M.D.	2 yrs.	12	3	JanJuly	B
St. Mary's Hospital, Brooklyn *		W. Moitrier Jr., M.D.	2 yrs.	12	10	MarOct	B
Buffalo General Hospital, Buffalo *	University of Buffalo †	S. L. Vaughan, M.D.	2 yrs.	12	17	Varies	$50
Edward J. Meyer Memorial Hospital, Buffalo *	University of Buffalo †	B. F. Hauenstein, M.D.	2 yrs.	12	16	JulySept	None
Millard Fillmore Hospital, Buffalo *	University of Buffalo †	A. V. Postoloff, M.D.	2 yrs.	12	6	Monthly	None
Arnot-Ogden Memorial Hospital, Elmira *		S. E. Cohen, M.D.	2 yrs.	12	3	Varies	None
St. Joseph's Hospital, Elmira *	Nazareth College †	J. A. Mitchell, M.D.	2 yrs.	12	5	JuneSept	$100
Flushing Hospital, Flushing *		J. Werne, M.D.	2 yrs.	12-15	4	JanJuly	None
Meadowbrook Hospital, Hempstead	Adelphi College	T. J. Curphey, M.D.	2 yrs.	18	3	Every 6 mo.	None
Mary Immaculate Hospital, Jamaica *		M. Bevilacqua, M.D.	Degree	12	4	Oct	B
St. John's Long Island City Hospital, Long Island City *		J. Werne, M.D.	2 yrs.	12-24	3	Varies	None
Northern Westchester Hospital, Mount Kisco *		R. A. Fox, M.D.	Degree	12	6	July	None
Montefiore Hospital for Chronic Diseases, New York City *	New York University	H. M. Zimmerman, M.D.	Degree	12	6	JanJuly	None
St. Clare's Hospital, New York City *		J. M. Ravid, M.D.	2 yrs.	18	8	Sept	B
Rochester General Hospital, Rochester *		M. G. Bohrod, M.D.	Degree	18	12	Sept	$100
St. Mary's Hospital, Rochester *		J. Adler, M.D.	2 yrs.	12	5	Sept	None
Ellis Hospital, Schenectady *		E. Kellert, M.D.	2 yrs.	12	8	Monthly	$100 [1]
U. S. Marine Hospital, Staten Island *	Wagner College †	L. Sophian, M.D.	3½ yrs.	12	8	FebSept	None
St. Joseph's Hospital, Syracuse *		H. J. Dick, M.D.	2 yrs.	18	2	July	$100 [1]
Samaritan Hospital, Troy *	Russell Sage College †	A. H. Mercer, M.D.	2 yrs.	12	3	Sept	$200
St. John's Riverside Hospital, Yonkers *		C. E. DeAngelis, M.D.	2 yrs.	12	3	Varies	None
NORTH CAROLINA							
Charlotte Memorial Hospital, Charlotte	Queen's College †	P. Kimmelstiel, M.D.	2 yrs.	12	5	Aug	B
Mercy Hospital, Charlotte *		T. H. Byrnes, M.D.	2 yrs.	15	4	Fall	None
Duke Hospital, Durham *	Duke University †		2 yrs.	21	40	Sept	$250 B
Watts Hospital, Durham *	University of North Carolina	J. U. Gunter, M.D.	2 yrs.	12	8	JanJuly	$50
Rex Hospital, Raleigh *		T. B. Wilson, M.D.	2 yrs.	18	4	Quarterly	None [1]
North Carolina Baptist Hosp., Winston-Salem *	Salem College †; Wake Forest Coll.†	C. C. Carpenter, M.D.	3 yrs.	12	10	July	$300
NORTH DAKOTA							
St. Alexius Hospital, Bismarck *		L. W. Larson, M.D.	2 yrs.	12	6	Sept	B
Grand Forks Deaconess Hospital, Grand Forks *	University of North Dakota †	J. D. Cardy, M.D.	2 yrs.	18	6	Sept	None
St. Michael's Hospital, Grand Forks *	University of North Dakota School of Medicine †	J. D. Cardy, M.D.	3 yrs.	12	3	June	U
Trinity Hospital, Minot *		M. Spyker, M.D.	2 yrs.	12	6	MaySept	$50
OHIO							
Children's Hospital, Akron *		M. Baker, M.D.	2 yrs.	12	4	FebSept	None [1]
City Hospital, Akron *		L. Catron, M.D.	2 yrs.	12	15	Varies	None [1]
Peoples Hospital, Akron		G. R. Dochat, M.D.	2 yrs.	12	5	JanJuly	B
St. Thomas Hospital, Akron		G. G. Proskauer, M.D.	2 yrs.	12	3	July	None [1]
Alliance City Hospital, Alliance *		A. P. Falkenstein, M.D.	2 yrs.	12	4	Varies	None
Aultman Hospital, Canton		D. G. Henderson, M.D.	2 yrs.	12	7	JanJuly	$100
Bethesda Hospital, Cincinnati *	University of Cincinnati †	D. G. Freiman, M.D.	3 yrs.	12	1	July	$275 B
Christ Hospital, Cincinnati *	University of Cincinnati †	J. W. Leichliter, M.D.	3 yrs.	12	4	July	U
Good Samaritan Hospital, Cincinnati	Coll. of Mt. St. Joseph-on-the Ohio †	W. M. Germain, M.D.	3 yrs.	16	8	Sept	$300
Jewish Hospital, Cincinnati *	University of Cincinnati †	P. Wasserman, M.D.	2 yrs.	12	4	July	$125
Our Lady of Mercy Hospital, Cincinnati *		K. E. Lande, M.D.	Degree	12	3	Varies	U
City Hospital, Cleveland *		T. D. Kinney, M.D.	2 yrs.	12	25	Varies	U
Cleveland Clinic Hospital, Cleveland *		J. W. King, M.D.	3 yrs.	12	12	Sept	$60
Mount Sinai Hospital, Cleveland	win-Wallace College †	B. S. Kline, M.D.	2 yrs.	12	12	Varies	$100
University Hospitals, Cleveland *	Western Reserve University †	H. Z. Lund, M.D.	2 yrs.	12	19	Varies	$100
Mount Carmel Hospital, Columbus *	Ohio University †; College of St. Mary of Springs †	H. B. Davidson, M.D.	2 yrs.	12	13	FebJuly	None
Ohio State University Hospital, Columbus *	Ohio State University †	H. L. Reinhart, M.D.	3 yrs.	12	40	Quarterly	U
Good Samaritan Hospital, Dayton *		H. J. Caes, M.D.	2 yrs.	12	2	July	None [1]
Miami Valley Hospital, Dayton	University of Dayton †	M. Oosting, M.D.	2 yrs.	13	6	July	None
St. Elizabeth Hospital, Dayton *	University of Dayton †	W. Abramson, M.D.	2 yrs.	12	4	Sept	U
Veterans Admin. Center, Dayton *	University of Dayton †	C. Raven, M.D.	2 yrs.	12	6	Varies	None
Huron Road Hospital, East Cleveland		E. Goodsitt, M.D.	2 yrs.	12	9	JanJuly	$50
Mercy Hospital, Hamilton *		K. E. Lande, M.D.	2 yrs.	12	6	FebJuly	B
Lakewood Hospital, Lakewood		O. Eitzen, M.D.	2 yrs.	12	3	Varies	$100
St. Rita's Hospital, Lima *		C. L. Blumstein, M.D.	2 yrs.	12	4	FebSept	None
St. Joseph's Hospital, Lorain *	Notre Dame College	C. Chesner, M.D.	2 yrs.	12	2	Varies	None
Mansfield General Hospital, Mansfield *		B. M. Hathaway, M.D.	2 yrs.	12	2	Varies	None [1]
Springfield City Hospital, Springfield *		M. P. Hunter, M.D.	2 yrs.	12	10	JuneOct	None
Flower Hospital, Toledo *		A. E. Rhoden, M.D.	2 yrs.	12	4	JanJuly	None [1]
Maumee Valley Hospital, Toledo *		W. H. Burrow, M.D.	2 yrs.	12	6	Varies	None
Mercy Hospital, Toledo *	University of Toledo †	J. B. Rucker, M.D.	2 yrs.	12	4	JuneSept	None
Riverside Hospital, Toledo *		D. C. Wilson, M.D.	Degree	12	2	MaySept	None [1]
St. Vincent's Hospital, Toledo		M. F. Vidoli, M.D.	3 yrs.	12	6	JanJune	None
Toledo Hospital, Toledo *							
St. Elizabeth Hospital, Youngstown *	State University †	B. Steinberg, M.D.	3 yrs.	12	6	Varies	None
Youngstown Hospital, Youngstown *		J. LoCricchio, M.D.	2 yrs.	12	3	June	None
	Youngstown College †	A. E. Rappoport, M.D.	2 yrs.	12	15	AprOct	$50

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

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OKLAHOMA							
Mercy Hospital, Oklahoma City	University of Oklahoma	H. A. Stout, M.D.	2 yrs.	12	4	Quarterly	None
St. Anthony Hospital, Oklahoma City	*Univ. of Oklahoma †; Agricultural* and Mechanical College †	H. Jeter, M.D.	Degree	12	6	Varies	None
University Hospitals, Oklahoma City *	University of Oklahoma †	L. L. Conrad, M.D.	Degree	12	8	MarSept	None
Wesley Hospital, Oklahoma City *		W. F. Keller, M.D.	Degree	12	6	Varies	None
St. John's Hospital, Tulsa *	University of Tulsa †	E. E. Palik, M.D.	Degree	12	10	Varies	None
OREGON							
Sacred Heart General Hospital, Eugene		E. D. Furrer, M.D.	2 yrs.	12	4	Varies	None
Emanuel Hospital, Portland	Lewis and Clark College †	H. H. Foskett, M.D.	2 yrs.	12	4	Varies	None
Good Samaritan Hospital, Portland *	Lewis and Clark College †	W. L. Lehman, M.D.	2 yrs.	12	10	Varies	B
Portland Sanitarium and Hospital, Portland *	University of Oregon Medical School	W. C. Hunter, M.D.	2 yrs.	12	3	JanJuly	None
St. Vincent's Hospital, Portland *		F. R. Menne, M.D.	Degree	12	5	Sept	$90[1]
University of Oregon Medical School Hospitals and Clinics, Portland *	University of Oregon Medical School †	R. D. Grondahl, M.D.	2 yrs.	12	20	Quarterly	None
Salem Memorial Hospital, Salem *		W. L. Lidbeck, M.D.	2 yrs.	12	3	Varies	None
PENNSYLVANIA							
Abington Memorial Hospital, Abington *		J. Eiman, M.D.	2 yrs.	12	12	JulySept	None
Allentown Hospital, Allentown	Cedar Crest College †; Moravian College for Women †	J. J. Wenner, M.D.	2 yrs.	12	8	June	$75
Sacred Heart Hospital, Allentown *	Cedar Crest College †; Moravian College for Women †	D. E. Stader, M.D.	3 yrs.	12	9	July	$90
St. Luke's Hospital, Bethlehem	Moravian College for Women †	T. A. Cope Jr., M.D.	2 yrs.	12	4	July	$100
Bryn Mawr Hospital, Bryn Mawr *	Beaver College †; Colby Junior College †	M. M. Strumia, M.D.	2 yrs.	15	8	Varies	B
Chambersburg Hospital, Chambersburg *	Wilson College †	W. E. B. Hall, M.D.	2 yrs.	12	4	JanJuly	None
Geo. F. Geisinger Memorial Hospital and Foss Clinic, Danville	Bucknell University †	H. F. Hunt, M.D.	2 yrs.	12	6	FebJuly	$300
Fitzgerald-Mercy Hospital, Darby		A. Valdes-Dapena, M.D.	2 yrs.	15	4	FebJune	B
Easton Hospital, Easton *	Moravian College for Women †	N. W. Larkum, M.D.	2 yrs.	12	4	July	None
St. Vincent's Hospital, Erie *		R. B. Eisenberg, M.D.	2 yrs.	12	7	Sept	None
Harrisburg Hospital, Harrisburg *		J. E. Kurtz, M.D.	2 yrs.	12	10	Monthly	None
Harrisburg Polyclinic Hospital, Harrisburg		J. S. Forrester, M.D.	2 yrs.	12	4	Sept	$100
Hazleton State Hospital, Hazleton *	Pennsylvania State College	J. Foldes, M.D.	2 yrs.	12	3	Sept	B
Mercy Hospital, Johnstown *	Mount Aloysius Junior College	H. B. Anderson, M.D.	2 yrs.	12	4	Sept	B
Nesbitt Memorial Hospital, Kingston		T. Baker, M.D.	2 yrs.	12	2	July	None
Lancaster General Hospital, Lancaster *		W. M. O'Donnell, M.D.	2 yrs.	18	4	Varies	$200
St. Joseph's Hospital, Lancaster *		E. E. Ziegler, M.D.	2 yrs.	12-18	6	July	B
Frankford Hospital, Philadelphia *		W. L. C. Spaeth, M.D.	2 yrs.	18	2	Varies	None
Germantown Dispensary and Hosp., Philadelphia	Jefferson Medical College	F. B. Lynch Jr., M.D.	2 yrs.	12	5	Sept	None
Hahnemann Hospital, Philadelphia *	Hahnemann Medical College †	J. E. Gregory, M.D.	2 yrs.	22	12	Sept	$100 B
Jefferson Medical College Hospital, Philadelphia		C. J. Bucher, M.D.	2 yrs.	18	20	MarSept	$100 B
Jewish Hospital, Philadelphia *		H. Brody, M.D.	2 yrs.	12	4	Varies	None
Lankenau Hospital, Philadelphia		C. E. Brown, M.D.	2 yrs.	12	4	Sept	$100
Mount Sinai Hospital, Philadelphia	Hahnemann Medical College	D. R. Meranze, M.D.	2 yrs.	18	3	Varies	$175 B
Nazareth Hospital, Philadelphia *		E. F. Ciccone, M.D.	2 yrs.	12	3	MarSept	$50 B
Pennsylvania Hospital, Philadelphia *		A. R. Crane, M.D.	2 yrs.	12	15	Monthly	$100
Pepper Laboratory of Clinical Medicine, University of Pennsylvania [illegible]	University of Pennsylvania	R. F. Norris, M.D.	2 yrs.	21	6	Monthly	$200
Philadelphia General [illegible]		J. H. Clark, M.D.	2 yrs.	12	4	Quarterly	None
Presbyterian Hospital, [illegible]		R. P. Custer, M.D.	2 yrs.	18	3	Varies	$150
St. Agnes Hospital, Philadelphia *		J. E. Imbriglia, M.D.	2 yrs.	18	8	Monthly	$75
St. Joseph's Hospital, Philadelphia *		F. E. Haentze, M.D.	2 yrs.	12	2	FebSept	$150 B
Temple University Hospital, Philadelphia *	Temple University †	E. E. Aegerter, M.D.	2 yrs.	25	14	FebSept	$200
Allegheny General Hospital, Pittsburgh *		R. C. Grauer, M.D.	2 yrs.	12	6	Sept	B
Mercy Hospital, Pittsburgh	Mount Mercy College	H. H. Permar, M.D.	Degree	12	8	Varies	None
Montefiore Hospital, Pittsburgh *		K. Yardumian, M.D.	2 yrs.	12	10	JuneSept	$100 B
Pottsville Hospital, Pottsville *		R. E. Hobbs, M.D.	2 yrs.	12-18	4	Varies	None
Community General Hospital, Reading *		H. S. Cook, M.D.	2 yrs.	12-18	4	Varies	None[1]
Reading Hospital, Reading	Albright College †	W. P. Jennings, M.D.	2 yrs.	12	4	Sept	None
St. Joseph's Hospital, Reading *		G. P. Desjardins, M.D.	2 yrs.	12	4	Varies	None
Robert Packer Hospital, Sayre *	Elmira College	C. H. DeWan, M.D.	2 yrs.	12	6	Aug	None[1]
Moses Taylor Hospital, Scranton		C. L. Mattas, M.D.	2 yrs.	12	4	Varies	None
Scranton State Hospital, Scranton *		E. P. Swartz, M.D.	2 yrs.	18	8	JanJuly	None
Sharon General Hospital, Sharon *	Thiel College †	P. C. Gillette, M.D.	2 yrs.	12	6	JulySept	$50
Allegheny Valley Hospital, Tarentum *		S. J. C. Miller, M.D.	2 yrs.	12	4	July	None
Wilkes-Barre General Hospital, Wilkes-Barre *		C. R. Tuthill, M.D.	2 yrs.	12	4	JulyOct	B
Williamsport Hospital, Williamsport *	Bucknell Univ.†; Lycoming Coll.†	M. G. Colvin, M.D.	2 yrs.	12	4	JulySept	None
RHODE ISLAND							
Memorial Hospital, Pawtucket		H. Fanger, M.D.	2 yrs.	12	2	Varies	None
Rhode Island Hospital, Providence		H. Fanger, M.D.	Degree	12	3	July	None[1]
St. Joseph's Hospital, Providence *		L. F. Bleyer, M.D.	2 yrs.	12	4	JulySept	None
SOUTH CAROLINA							
Medical College of the State of South Carolina, Charleston *		D. W. Ellis, M.D.	2 yrs.	15	20	Every 6 wks.	B
McLeod Infirmary, Florence		J. W. McMeans, M.D.	Degree	12	2	Varies	None[1]
Greenville General Hospital, Greenville *		E. A. Dreskin, M.D.	2 yrs.	12	3	Varies	None
SOUTH DAKOTA							
St. Luke's Hospital, Aberdeen *		A. J. Miller, M.D.	2 yrs.	12	4	Sept	None[1]
McKennan Hospital, Sioux Falls *	University of South Dakota †	A. Myrabo, M.D.	2 yrs.	12	4	JanJuly	$70 B
Sioux Valley Hospital, Sioux Falls *	University of South Dakota †	J. Y. Clarke, M.D.	2 yrs.	12	5	JulySept	$70 B
Sacred Heart Hospital, Yankton	*University of South Dakota †*	*W. V. Thompson, M.D.*	2 yrs.	12	3	JuneSept	$84 B
TENNESSEE							
Baroness Erlanger Hospital, Chattanooga *	University of Chattanooga †	J. W. Adams Jr., M.D.	2 yrs.	12	10	Varies	None
Knoxville General Hospital, Knoxville		R. H. Monger, M.D.	2 yrs.	12	4	Quarterly	None
John Gaston Hospital, Memphis *	University of Tennessee †	D. H. Sprunt, M.D.	2 yrs.	15	12	JanJuly	U & B
Methodist Hospital, Memphis *	University of Tennessee	*W. W. Tribby, M.D.*	2 yrs.	13	6	Quarterly	$100
St. Joseph Hospit [illegible]		W. Hurteau, M.D.	2 yrs.	15	6	Every 2 mo.	B
Geo. W. Hubbard [illegible]	Tennessee A. & I. State College †	G. D. Holloway, M.D.	2 yrs.	24	8	Sept	$250
Nashville General [illegible]		W. A. De Monbreun, M.D.	2 yrs.	12	5	Varies	None
St. Thomas Hospital, Nashville *		D. K. Gotwald, M.D.	2 yrs.	12	4	JanJuly	None
Veterans Admin. Hospital, Nashville *		S. H. Auerbach, M.D.	2 yrs.	12	4	MarSept	None
TEXAS							
Hendrick Memorial Hospital, Abilene *	Hardin-Simmons University †	J. E. Williams, M.D.	3 yrs.	12	12	Monthly	None
Brackenridge Hospital, Austin *		S. W. Bohls, M.D.	Degree	12	3	AprOct	None[1]
Baptist Hosp. of Southeast Texas, Beaumont *	Lamar College †	H. W. Neidhardt, M.D.	2 yrs.	12	3	FebJuly	None
Hotel Dieu Hospital, Beaumont	Lamar College	E. D. Furey, M.D.	2 yrs.	18	3	Varies	None
St. Therese Hospital, Beaumont *	Lamar College	H. B. Williford, M.D.	2 yrs.	18	4	FebSept	None
Baylor University Hospital, Dallas	Baylor University †	J. M. Hill, M.D.	2 yrs.	13	12	FebJuly	$100

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

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TEXAS—Continued							
St. Paul's Hospital, Dallas *		J. L. Goforth, M.D.	2 yrs.	12-14	6	MarSept	None
Hotel Dieu, Sisters' Hospital, El Paso *		M. S. Hart, M.D.	2 yrs.	12	2	Varies	None
Harris Hospital, Fort Worth *	Texas Christian University †	C. D. Fitzwilliam, M.D.	2 yrs.	12-18	10	FebSept	$180
Terrell's Laboratories (All Saints and City-County Hospitals), Fort Worth	North Texas State Teachers' Coll.†	T. C. Terrell, M.D.	3 yrs.	24	12	Varies	None[1]
St. Mary's Infirmary, Galveston *		W. L. Marr, M.D.	2 yrs.	12	4	FebJuly	None
University of Texas Medical Branch Hospitals, Galvesto	North Texas State Teachers College †	E. E. Baird, M.D.	2 yrs.	12	12	Monthly	$140
Hermann		V. H. Keiller, M.D.	2 yrs.	12	10	Quarterly	$50[1]
Jefferson	Texas State University †; Baylor University College of Medicine	S. A. Wallace, M.D.	2 yrs.	12	12	Monthly	$50
Methodist Hospital, Houston *	Southwestern Univ.†; Baylor University College of Medicine	S. A. Wallace, M.D.	2 yrs.	12	6	Monthly	None[1]
St. Joseph's Infirmary, Houston	Texas State University †	P. M. Marcuse, M.D.	2 yrs.	12	6	SpringFall	None
St. Mary's Hospital, Port Arthur *	Northwestern State College †	H. B. Williford, M.D.	2 yrs.	12-18	6	JuneSept	B
Baptist Memorial Hospital, San Antonio *		A. O. Severance, M.D.	2 yrs.	13	12	Monthly	None[1]
Nix Memorial Hospital, San Antonio		B. F. Stout, M.D.	2 yrs.	12	3	Varies	None[1]
Santa Rosa Hospital, San Antonio *	Incarnate Word College †	J. M. Moore, M.D.	2 yrs.	12	10	Varies	None[1]
Scott and White Hospital, Temple		W. N. Powell, M.D.	2 yrs.	12	10	JulySept	None[1]
Wichita Falls Clinic-Hospital, Wichita Falls		R. C. Lyons, M.D.	2 yrs.	12	8	Quarterly	None
UTAH							
St. Benedict's Hospital, Ogden *	University of Utah †	R. C. Ellis, M.D.	2 yrs.	12	10	Varies	$75 B
Thomas D. Dee Memorial Hospital, Ogden *	University of Utah †; Weber College †; Brigham Young University †	E. D. Zeman, M.D.	2 yrs.	12	3	JanJune	None
Dr. W. H. Groves Latter-Day Saints Hospital, Salt Lake City *	University of Utah †; State Agricultural College †	J. H. Carlquist, M.D.	3 yrs.	12	5	JanJuly	None
Holy Cross Hospital, Salt Lake City	University of Utah †	C. McNeil, M.D.	3 yrs.	12	5	July	None[1]
St. Mark's Hospital, Salt Lake City *	Brigham Young University †	S. A. Swift, M.D.	2 yrs.	12	4	June	None[1]
Salt Lake County Gen. Hosp., Salt Lake City *	University of Utah School of Med.†	F. D. Gunn, M.D.	3 yrs.	12	6	Varies	None
VERMONT							
University of Vermont College of Medicine, Burlington *	University of Vermont †	B. Pearson, M.D.	3 yrs.	15	8	Aug	U
VIRGINIA							
University of Virginia Hospital, Charlottesville *		W. E. Bray, M.D.	2 yrs.	12	12	Sept	B
DePaul Hospital, Norfolk		A. F. Strauss, M.D.	2 yrs.	18	12	July	B
Norfolk General Hospital, Norfolk *		E. D. Levy, M.D.	2 yrs.	15	10	JuneSept	B
Grace Hospital, Richmond		J. H. Scherer, M.D.	2 yrs.	15	5	Varies	B
Johnston-Willis Hospital, Richmond		W. A. Shepherd, M.D.	2 yrs.	15	2	SpringFall	$100
Medical College of Virginia, Hospital Division, Richmond *	Richmond Professional Institute †	G. Z. Williams, M.D.	2 yrs.	18	16	Varies	$25
Stuart Ci	Richmond Professional Institute †	R. C. Beck, M.D.	2 yrs.	12	4	JuneSept	B
Jefferson		F. Beckel, M.D.	2 yrs.	12	4	March	None
WASHINGTON							
King County Hospital, Seattle *		C. R. Jensen, M.D.	Degree	12	10	Quarterly	None[1]
Providence Hospital, Seattle *	Seattle University †	D. G. Mason, M.D.	2 yrs.	12	4	Quarterly	$20[1]
Deaconess Hospital, Spokane *	Univ. of Idaho †; Whitworth College †	T. E. Ludden, M.D.	2 yrs.	12	8	Varies	None[1]
Sacred Heart Hospital, Spokane *		J. E. Hill, M.D.	2 yrs.	12	8	Varies	None
St. Luke's Hospital, Spokane *	[3]	O. O. Christianson, M.D.	2 yrs.	12	16	Varies	$40
St. Joseph's Hospital, Tacoma *	Seattle University †	C. R. McColl, M.D.	2 yrs.	12	5	Varies	$20[1]
Tacoma General Hospital, Tacoma *	College of Puget Sound †	C. P. Larson, M.D.	2 yrs.	12	7	Varies	None
WEST VIRGINIA							
St. Mary's Hospital, Clarksburg *	Wesleyan University	H. Fischer, M.D.	2 yrs.	12	12	Monthly	B
Fairmont General Hospital, Fairmont *	Fairmont State College †	W. A. Ehrgott, M.D.	3 yrs.	12	3	JuneDec	None
School of Med., West Va. Univ., Morgantown *	West Virginia University †	M. L. Hobbs, M.D.	3 yrs.	12	12	June	U & B
Camden-Clark Memorial Hospital, Parkersburg		W. S. Dick, M.D.	2 yrs.	15	5	July	None[1]
St. Joseph's Hospital, Parkersburg *	Marietta College	P. W. Warga, M.D.	2 yrs.	12	2	July	$100
Myers Clinic Hospital, Philippi *		E. E. Myers, M.D.	2½ yrs.	20	10	Sept	$70
WISCONSIN							
St. Francis Hospital, La Crosse		P. C. Dietz, M.D.	2 yrs.	12	6	Sept	$100
Madison General Hospital, Madison		L. McGary, M.D.	2 yrs.	12	5	Oct	None
St. Mary's Hospital, Madison	Mount Mary College; Coll. of St. Teresa †	W. P. L. McBride, M.D.	2 yrs.	12	10	JuneSept	None
State of Wisconsin General Hospital, Madison	University of Wisconsin †	W. D. Stovall, M.D.	3 yrs.	12	20	Sept	U
St. Joseph's Hospital, Marshfield *	Wisconsin State Teachers College, Superior †	J. B. Miale, M.D.	2 yrs.	12	4	Varies	$50
Columbia Hospital, Milwaukee *	Marquette University †	G. Ritchie, M.D.	2 yrs.	18	3	JanJuly	None[1]
Evangelical Deaconess Hospital, Milwaukee		R. S. Haukohl, M.D.	2 yrs.	12-18	4	Sept	$100
Milwaukee County Hospital, Milwaukee *	Marquette University †	J. F. Kuzma, M.D.	2 yrs.	18	6	July	None
Milwaukee Hospital, Milwaukee *		E. A. Birge, M.D.	2 yrs.	12	6	July	None
Mount Sinai Hospita'		N. Enzer, M.D.	2 yrs.	12	2	July	None
St. Joseph's Hospita	Marquette University †	W. A. D. Anderson, M.D.	2 yrs.	12	6	June	$15
St. Luke's Hospital,		L. J. Van Hecke, M.D.	2 yrs.	12	2	FebJuly	None
St. Mary's Hospital, Milwaukee *	Marquette University †; Mount Mary College †	S. B. Pessin, M.D.	2 yrs.	12-18	6	Varies	None
Veterans Admin. Center, Milwaukee (Wood) *		J. M. Lubitz, M.D.	2 yrs.	12	10	Sept	None
St. Mary's Hospital, Racine		M. Schuster, M.D.	2 yrs.	12	4	June	B
St. Mary's Hospital, Wausau *		O. R. Kelley, M.D.	2 yrs.	15	6	Quarterly	$50 B
WYOMING							
Memorial Hospital, Cheyenne *	University of Wyoming †	S. S. Zuckerman, M.D.	2 yrs.	12	8	AprSept	U
CANAL ZONE							
Board of Health Laboratory, Gorgas Hospital, Ancon *		N. W. Elton, M.D.	2 yrs.	12	6	Quarterly	None
HAWAII							
Kuakini Hospital, Honolulu *	University of Hawaii †	I. L. Tilden, M.D.	3 yrs.	12	2	June	None
Queen's Hospital, Honolulu *	University of Hawaii †	S. Price, M.D.	3 yrs.	12	3	July	U
St. Francis Hospital, Honolulu *	University of Hawaii †	C. F. Moran, M.D.	2 yrs.	12	2	June	None
Tripler Army Hospital, Moanalua, Honolulu *	University of Hawaii †	G. B. Stansell, M.D.	3 yrs.	12	9	June	None
PUERTO RICO							
School of Tropical Medicine, University of Puerto Rico, San Juan *	University of Puerto Rico †	C. Mandry, M.D.	Degree	12	20	Aug	$150 B

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† College credit received during hospital training.

[1] Students are paid a stipend.

[2] College credit allowed by each of the following affiliations: Michigan State College, Western Michigan College of *Education*, Central College of Education, Albion College, Alma College, Michigan College of Mining and Technology, Northern Michigan *College of Education*.

[3] University of Idaho, Washington State College, Gonzaga University, Whitworth College, Montana State College.

SCHOOLS FOR X-RAY TECHNICIANS

Appearing in this issue of The Journal, is a list of the 283 schools for x-ray technicians now approved by the Council on Medical Education and Hospitals. In 1949 there were 267 approved training programs in this field and 224 in 1948. Thus it will be noted that in the past year there has been a net gain of 16 schools while in the previous twelve months' period 43 new schools were added to the list.

The maximum enrolment of the 283 schools currently approved is 1,653 as compared with an enrolment of 1,447 in 1949 and 1,176 in 1948, an increase of 477 in a two year period. The reports further show that 923 students were graduated in 1950 as compared with 764 the previous year.

In this field of technical training high school graduation is the minimum requirement for admission to an approved course. A total of 259 schools have adopted this minimum entrance requirement, 15 schools specified one or two years of college while 9 listed one to four years of college or an R.N. degree. Coinciding very closely with last year, the minimum length of training, twelve months, is in effect in 146 schools, 89 reported 24 months' training, with the length of courses in the other 48 schools varying from 15 months to four years. Men students are admitted to 205 schools. Of the 283 schools approved, 183 have advised that no tuition is charged; there is, however, a wide variation in the tuition of the remaining one hundred schools which ranges from $25 to $500. At some period during the hospital training 93 schools pay a stipend.

In tracing developments in this field it is interesting to note that the first approved list, published in 1945, contained the names of 112 schools. During the following six years 171 new training programs have been established.

The American College of Radiology is cooperating with the Council on Medical Education and Hospitals in the inspection of schools for x-ray technicians. This program, which has recently been placed in operation, includes a survey of individual schools by state or regional councilors of the College, an evaluation of all data by an advisory committee and thereafter a further review by the Board of Chancellors of the College which, in turn, will make its recommendations to the Council on Medical Education and Hospitals. The evaluation procedure will include such items as adequacy of didactic instruction, proper supervision of technical activities, desirable ratio of student technicians to instructors, satisfactory amount of teaching material, suitable hospital facilities, sufficient resources and general conformity with present standards. The final decision with reference to the continued approval of individual schools will, as in the past, rest with the Council on Medical Education and Hospitals.

Acceptable schools may be conducted by approve medical schools, general hospitals or x-ray department affiliated with a general hospital. Applications for approval should be submitted to the Council on Medica Education and Hospitals, 535 North Dearborn Stree Chicago 10. Inquiries regarding registration of qualifie x-ray technicians should be addressed to the America Registry of X-Ray Technicians, 2900 East Minnehah Parkway, Minneapolis 6. The Registry is sponsored b the American College of Radiology and the America Society of X-Ray Technicians.

APPROVED SCHOOLS FOR X-RAY TECHNICIANS

Council on Medical Education and Hospitals of the American Medical Association

NOTE: Complete details regarding admission to an approved school for x-ray technicians can be obtained by communicating directly with the radiologist. Asterisk (*) after name of school indicates that male as well as female students are admitted.

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
ALABAMA							
Jefferson-Hillman Hospital, Birmingham *	M. Barfield-Carter, M.D.	High school	12	6	JanJuly	$100	Certificate
ARIZONA							
St. Monica's Hospital, Phoenix *	D. D. Gain, M.D.	High school	12-18	4	Varies	None	Certificate
ARKANSAS							
University Hospital, Little Rock *	I. Meschan, M.D.	High school	12	12	FebAug	$165	Certificate
CALIFORNIA							
Herrick Memorial Hospital, Berkeley *	H. P. Brean, M.D.	High school	24	3	Varies	$400	Certificate
California Hospital, Los Angeles *	W. Hiemstra, M.D.	High school	24	4	Varies	$50 †	Certificate
Cedars of Lebanon Hospital, Los Angeles *	E. Freedman, M.D.	High school	12	4	Every 6 mo.	None	Certificate
Childrens Hospital, Los Angeles *	R. G. Karshner, M.D.	2 yrs. coll. or R.N.	24	12	Varies	$100	Certificate
College of Medical Evangelists, Los Angeles *	W. L. Stilson, M.D.	1 yr. college	12	6	Every 2 mo.	$100	Certificate
Los Angeles County Hospital, Los Angeles *	R. A. Carter, M.D.	2 yrs. coll. or R.N.	12	10	Varies	None †	Certificate
Paradise Valley Sanit. and Hosp., National City *	C. L. Stewart, M.D.	High school	12	2	FebSept	$100	Certificate
Collis P. and Howard Huntington Memorial Hospital, Pasadena	R. S. Harrison, M.D.	2 yrs. college	12	3	Sept	$25	Certificate
Mercy Hospital, Sacramento	J. D. Lawson, M.D.	1 yr. college	12	3	FebSept	None	Certificate
Stanford University Hospitals, San Francisco *	H. S. Kaplan, M.D.	High school	12	4	JanJuly	None	Certificate
COLORADO							
Colorado General Hospital, Denver *	M. H. Levine, M.D.	High school	12	12	FebAug	$100	Certificate
Denver General Hospital, Denver *	E. Salzman, M.D.	High school	12	8	JanJuly	None	Certificate
General Rose Memorial Hospital, Denver *	J. H. Weiss, M.D.	High school	12	4	Quarterly	None	Certificate
Presbyterian Hospital, Denver *	K. D. A. Allen, M.D.	High school	12	5	Quarterly	None	Coll. Credit
St. Anthony Hospital, Denver	J. S. Bouslog, M.D.	1 yr. college	12	8	JanJune	None	Certificate
St. Luke's Hospital, Denver *	W. P. Stampfli, M.D.	High school	12	7	Every 2 mo.	None	Cert. & Dipl.
St. Mary's Hospital, Grand Junction	T. K. Mahan, M.D.	High school	12	4	Quarterly	None †	Certificate
Weld County Hospital, Greeley	W. W. McCaw, M.D.	1 yr. college	12	3	Every 6 mo.	None	Diploma

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
CONNECTICUT							
Hartford Hospital, Hartford *	R. T. Ogden, M.D.	High school	24	8	July	None †	Certificate
Grace Unit, Grace-New Haven Community Hospital, New Haven *	R. M. Lowman, M.D.	High school	24	7	Every 6 mo.	None	Certificate
New Haven Unit, Grace-New Haven Community Hospital, New Haven *	A. H. Janzen, M.D.	High school	24	3	July	None †	Certificate
Hospital of St. Raphael, New Haven *	R. Shapiro, M.D.	High school	18	4	July	None	Certificate
FLORIDA							
Sacred Heart Hospital, Pensacola *	N. Arenson, M.D.	High school	12	2	JanJuly	None	Certificate
GEORGIA							
Crawford W. Long Memorial Hospital, Atlanta *	J. D. King, M.D.	High school	12	4	Quarterly	None	Certificate
Georgia Baptist Hospital, Atlanta *	L. Long, M.D.	High school	12	4	JanJune	None	Certificate
Grady Memorial Hospital, Atlanta *	H. S. Weens, M.D.	High school	12	12	Quarterly	None	Certificate
Piedmont Hospital, Atlanta	G. R. Hrdlicka, M.D.	High school	12	2	Every 6 mo.	None	Certificate
University Hospital, Augusta *	L. P. Holmes, M.D.	High school	12	10	JanJuly	None	Certificate
Veterans Admin. Hospital, Chamblee *	A. E. Willis, M.D.	High school	12	4	JanJuly	None	Certificate
Emory University Hospital, Emory University *	T. F. Leigh, M.D.	2 yrs. college	12	6	Quarterly	$100	Certificate
IDAHO							
St. Alphonsus Hospital, Boise *	J. B. Morris, M.D.	High school	18	5	Varies	None †	Certificate
St. Luke's Hospital, Boise *	A. M. Popma, M.D.	High school	18	4	Spring&Fall	None	Certificate
Mercy Hospital, Nampa *	N. Bolker, M.D.	High school	12	4	Spring&Fall	None	Certificate
Samaritan Hospital, Nampa *	N. Bolker, M.D.	High school	12	2	JanJune	None	Diploma
Twin Falls County Hospital, Twin Falls	J. H. Raymond, M.D.	High school	18	2	Varies	None	Certificate
ILLINOIS							
Alexian Brothers Hospital, Chicago *	C. Colangelo, M.D.	High school	24	2	Varies	None	Certificate
Augustana Hospital, Chicago	D. S. Beilin, M.D.	4 yrs. coll. or R.N.	18	2	FebJuly	None †	Diploma
Chicago Memorial	J. F. Sammet, M.D.	High school	12	4	Quarterly	None	Certificate
Cook County Grad	G. M. Landau, M.D.	High school	12	20	JanJuly	$150	Certificate
Edgewater Hospital, Chicago *	N. S. Zeitlin, M.D.	High school	12	8	Varies	$235	Certificate
Englewood Hospital, Chicago *	A. J. Rosenblate, M.D.	High school	18	6	Spring&Fall	None †	Certificate
Evangelical Hospital, Chicago *	B. C. Cushway, M.D.	High school	18	6	Oct	None †	Certificate
Lutheran Deaconess Hospital, Chicago	F. L. Hussey, M.D.	High school	18	4	Every 6 mo.	None †	Cert. & Dipl.
Michael Reese Hospital, Chicago	R. A. Arens, M.D.	1 yr. college	18	6	Varies	None †	Certificate
Mount Sinai Hospital, Chicago *	J. Arendt, M.D.	High school	12	7	Every 6 mo.	None	Certificate
Norwegian-American Hospital, Chicago *	R. H. Warden, M.D.	High school	24	6	Spring&Fall	$250 yr.	Certificate
Provident Hospital, Chicago *	W. P. Quinn, M.D.	High school	24	14	Varies	$150 yr.	Certificate
Ravenswood Hospital, Chicago	D. L. Jenkinson, M.D.	High school	18	7	Varies	None	Diploma
St. Anne's Hospital, Chicago	R. M. Cassidy, M.D.	High school	24	4	Sept	None †	....
St. Bernard's Hospital, Chicago *	B. C. Cushway, M.D.	High school	18	6	Oct	None †	Certificate
St. Elizabeth Hospital, Chicago *	J. Brams, M.D.	High school	12	3	Varies	None †	Certificate
St. George's Hospital, Chicago *	B. C. Cushway, M.D.	High school	18	6	Oct	None †	Certificate
St. Joseph Hospital, Chicago *	W. E. Anspach, M.D.	High school	12	2	JanJuly	None	Certificate
St. Luke's Hospital, Chicago	E. L. Jenkinson, M.D.	2 yrs. coll. or R.N.	18	13	Varies	$75	Diploma
St. Mary of Nazareth Hospital, Chicago *	C. J. Challenger, M.D.	High school	24	5	Varies	$250 †	Diploma
South Chicago Community Hospital, Chicago *	B. D. Braun, M.D.	High school	18	8	Varies	None †	Certificate
Woodlawn Hospital, Chicago *	L. Donaldson, M.D.	High school	18	3	Quarterly	None †	Certificate
Dixon Public Hospital, Dixon *	S. L. Parks, M.D.	High school	12	2	Varies	None	Diploma
Memorial Hospital of Du Page County, Elmhurst	C. R. Snead, M.D.	High school	18	2	Varies	$50	Certificate
St. Francis Hospi	A. C. Ledoux, M.D.	High school	12	3	Varies	$50 †	Certificate
Ingalls Memorial	M. Indovina, M.D.	High school	24	4	Sept	None †	Certificate
John C. Proctor	P. B. Goodwin, M.D.	High school	12-24	6	Every 6 mo.	$100	Certificate
Methodist Hospital of Central Illinois, Peoria *	F. H. Decker, M.D.	High school	12-24	4	Varies	None	Certificate
St. Francis Hospital, Peoria *	P. R. Dirkse, M.D.	High school	24	7	FebSept	$100 †	Certificate
Rockford Memorial Hospital, Rockford	B. Roseberg, M.D.	High school	18	3	Varies	None	Certificate
St. Anthony's Hos	T. J. Lang, M.D.	High school	18	4	Spring&Fall	$25 †	Diploma
Swedish-American	H. W. Ackemann, M.D.	High school	18	2	Quarterly	None	Certificate
Memorial Hospita	J. E. King, M.D.	High school	12	6	JanJune	None	Certificate
St. John's Hospit	W. DeHollander, M.D.	High school	12	4	Sept	$50	Certificate
INDIANA							
St. Catherine Hospital, East Chicago	B. D. Braun, M.D.	High school	24	8	JanJuly	$100 †	Diploma
St. Joseph Hospital, Fort Wayne *	C. H. Warfield, M.D.	High school	24	7	August	$100 †	Certificate
Methodist Hospital, Gary	J. P. Bennett, M.D.	High school	12	4	Quarterly	None †	Diploma
Indiana University	J. A. Campbell, M.D.	High school	12	25	Sept	$50	Certificate
Methodist Hospital,	H. C. Ochsner, M.D.	High school	12	6	Varies	None †	Diploma
St. Anthony Hospit	H. J. Pierce, M.D.	High school	24	6	Every 6 mo.	$50	Certificate
IOWA							
Mercy Hospital, Cedar Rapids	A. W. Erskine, M.D.	High school	24	3	August	None	Certificate
St. Luke's Methodist Hospital, Cedar Rapids	J. V. Prouty, M.D.	High school	24	4	JanJuly	None	Certificate
Mercy Hospital, Council Bluffs *	J. F. Kelly, M.D.	High school	24	4	Sept	None	Certificate
Broadlawns, Polk County Hospital, Des Moines *	A. B. Phillips, M.D.	High school	24	2	August	$210 †	Certificate
Finley Hospital, Dubuque *	R. P. Rusk, M.D.	High school	24	3	Every 6 mo.	$200	Certificate
St. Joseph Mercy Hospital, Dubuque *	R. P. Rusk, M.D.	High school	24	2	Every 6 mo.	None	Certificate
University Hospitals, Iowa City *	H. D. Kerr, M.D.	High school	12	12	Every 5 wks.	None	Certificate
St. Joseph Hospital, Ottumwa *	J. Stewart, M.D.	High school	24	2	Sept	None	Certificate
St. Joseph Mercy Hospital, Sioux City *	M. M. McCuistion, M.D.	High school	24	3	FebSept	None †	Diploma
KANSAS							
Bethany Hospital, Kansas City	P. E. Hiebert, M.D.	High school	24	1	Sept	None †	Certificate
St. Margaret's Hospital, Kansas City	P. E. Hiebert, M.D.	High school	24	2	JanJune	None †	Diploma
University of Kansas School of Medicine, Kansas City	G. M. Tice, M.D.	2 yrs. college	12	6	Varies	None †	Certificate
Wesley Hospital, Wichita	N. C. Nash, M.D.	High school	24	5	JuneSept	None †	Certificate
Wichita Hospital, Wichita *	A. F. Rossitto, M.D.	High school	12	8	MarSept	None	Certificate
KENTUCKY							
St. Elizabeth Hospital, Covington *	N. Adair, M.D.	High school	12	4	June	None †	Certificate
Louisville General Hospital, Louisville *	E. L. Pirkey, M.D.	High school	12	8	Varies	$50	Certificate
Norton Memorial Infirmary, Louisville *	J. C. Bell, M.D.	High school	12	3	Varies	$50	Diploma
St. Joseph Infirmary, Louisville *	S. E. Johnson, M.D.	High school	24	8	FebSept	None †	....
LOUISIANA							
Charity Hospital of Louisiana, New Orleans *	M. Garcia, M.D.	High school	12	14	August	None	Certificate
Touro Infirmary, New Orleans *	A. R. Payzant, M.D.	High school	12	4	Quarterly	$100	Cert. & Dipl.
U. S. Marine Hospital, New Orleans *	A. Mayoral, M.D.	High school	12	2	JanJuly	None †	Certificate
Shreveport Charity Hospital, Shreveport *	G. M. Riley, M.D.	High school	18	11	Every 6 mo.	None	Cert. & Dipl.

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
MAINE							
Central Maine General Hospital, Lewiston	C. F. Miller, M.D.	High school	12	2	Sept	None	Certificate
Maine General Hospital, Portland *	J. Spencer, M.D.	High school	12	2	Oct	None	Certificate
MARYLAND							
Baltimore City Hospital, Baltimore *	J. De Carlo Jr., M.D.	High school	24	7	Varies	None †	Cert. & Dipl.
Johns Hopkins Hospital, Baltimore *	R. H. Morgan, M.D.	High school	18	33	MarSept	$100	Certificate
University Hospital, Baltimore	W. L. Kilby, M.D.	High school	12	6	July	None	Certificate
MASSACHUSETTS							
Massachusetts Memorial Hospitals, Boston	G. Levene, M.D.	High school	12	3	JanSept	None	Certificate
Peter Bent Brigham Hospital, Boston *	M. C. Sosman, M.D.	High school	12	3	Every 4 mo.	None	Certificate
Providence Hospital, Holyoke	E. J. Harrington, M.D.	High school	15	2	Spring&Fall	None	Certificate
Lawrence General Hospital, Lawrence *	G. V. West, M.D.	High school	12	4	FebSept	$120	Certificate
St. Luke's Hospital, Pittsfield	F. Martin, M.D.	High school	12	3	Quarterly	None	Diploma
Quincy City Hospital, Quincy *	W. S. Altman, M.D.	High school	12-24	3	JulySept	None	Certificate
Mercy Hospital, Springfield	A. J. Horrigan, M.D.	High school	18	3	Every 6 mo.	None	Certificate
St. Vincent Hospital, Worcester	A. E. O'Connell, M.D.	High school	12	3	Sept	None	Certificate
MICHIGAN							
St. Joseph Mercy Hospital, Ann Arbor	S. W. Donaldson, M.D.	High school	12	4	July	None	Certificate
Leila Y. Post Montgomery Hospital, Battle Creek *	S. P. Barden, M.D.	High school	12	7	Quarterly	None	Certificate
Detroit Memorial Hospital, Detroit *	J. E. Lofstrom, M.D.	High school	12	10	MarSept	$150	Certificate
Jennings Memorial Hospital, Detroit *	F. C. Jewell, M.D.	High school	12	2	JulySept	None	Certificate
Mount Carmel Mercy Hospital, Detroit *	J. M. Grace, M.D.	High school	24	6	Sept	$100	Diploma
Saratoga General Hospital, Detroit *	F. C. Jewell, M.D.	High school	12	2	Sept	$50	Certificate
Wayne County General Hospital and Infirmary, Eloise *	E S. Peeke, M.D.	High school	12	3	Quarterly	None	Certificate
Hurley Hospital, Flint *	D. R. Limbach, M.D.	High school	18	20	Varies	$50	Certificate
Blodgett Memorial Hospital, Grand Rapids *	H. C. Jones, M.D.	High school	12	2	Varies	None †	Certificate
MINNESOTA							
St. Luke's Hospital, Duluth *	A. L. Abraham, M.D.	High school	18	8	Quarterly	None	Certificate.
St. Mary's Hospital, Duluth	J. R. McNutt, M.D.	2 yrs. coll. or R.N.	12	6	MarSept	None	Diploma
Eitel Hospital, Minneapolis	R. H. Beiswanger, M.D.	High school	12	3	Varies	None †	Certificate
Fairview Hospital, Minneapolis *	G. M. Kelby, M.D.	High school	12	4	JanJune	$100 †	Certificate
Minneapolis General Hospital, Minneapolis	O. Lipschultz, M.D.	High school	12	18	Monthly	None	Diploma
St. Mary's Hospital, Minneapolis *	W. H. Ude, M.D.	High school	12	6	AprOct	None	Certificate
Swedish Hospital, Minneapolis *	G. T. Nordin, M.D.	High school	12	12	Monthly	$125	Certificate
University of Minnesota Hospitals, Minneapolis *	L. G. Rigler, M.D.	2 yrs. coll. or R.N.	15	25	Quarterly	$110	Certificate
St. Cloud Hospital, St. Cloud	C. B. Nessa, M.D.	High school	24	12	Sept	$50	Certificate
Bethesda Hospital, St. Paul *	J. P. Medelman, M.D.	High school	12	5	Varies	None	Certificate
Charles T. Miller Hospital, St. Paul *	H. O. Peterson, M.D.	High school	12	7	Varies	None	Certificate
St. Joseph's Hospital, St. Paul *	J. P. Medelman, M.D.	High school	12	6	JanJune	None	Certificate
MISSISSIPPI							
Lutheran Hospital, Vicksburg	F. J. Hamernik, M.D.	High school	12	3	July	None †	Certificate
Mercy Hospital-Street Memorial, Vicksburg *	T. B. Dominick, M.D.	High school	12	3	Varies	None	Certificate
MISSOURI							
Independence Sanitarium and Hospital, Independence *	J. F. Bowser, M.D.	High school	12	4	Sept	None †	Certificate
Kansas City General Hospital No. 1, Kansas City	E. H. Stratemeier, M.D.	High school	12	6	Every 4 mo.	None †	Certificate
Kansas City General Hospital No. 2, Kansas City	A. B. Smith, M.D.	High school	12	5	JanSept	None †	Certificate
Menorah Hospital, Kansas City	D. S. Dann, M.D.	High school	24	8	Quarterly	None †	Certificate
Research Hospital, Kansas City	I. H. Lockwood, M.D.	High school	12	8	JanJuly	None †	Certificate
St. Luke's Hospital, Kansas City	L. A. Scarpellino, M.D.	High school	12	6	Quarterly	$25	Certificate
De Paul Hospital, St. Louis *	E. C. Ernst, M.D.	High school	24	4	JanJuly	$180 †	Certificate
Evangelical Deaconess Hospital, St. Louis	J. C. Peden, M.D.	High school	24	8	FebSept	$100 †	Diploma
Homer G. Phillips Hospital, St. Louis *	W. E. Allen Jr., M.D.	High school	24	6	Sept	$15 mo.	Certificate
St. Louis University School of Nursing, St. Louis *	L. R. Sante, M.D.	High school	4 yrs.	27	Varies	University	Dipl. & Deg.
St. Mary's Infirmary, St. Louis	W. E. Allen, M.D.	High school	24	2	Sept	$150	Certificate
Washington University School of Medicine, St. Louis *	H. M. Wilson, M.D.	High school	24	4	MarSept	$200 †	Certificate
Burge Hospital, Springfield *	M. W. Dietz, M.D.	High school	12	2	Quarterly	None †	Certificate
MONTANA							
Murray Hospital, Butte *	J. G. Sawyer, M.D.	High school	12	2	Varies	None	Certificate
NEBRASKA							
St. Francis Hospital, Grand Island *	B. B. Woodruff, M.D.	1 yr. college	24	5	Varies	None †	Diploma
St. Elizabeth Hospital, Lincoln *	J. T. McGreer, M.D.	High school	24	5	FebJune	None †	Cert. & Dipl.
Creighton Memorial, St. Joseph Hospital, Omaha *	J. F. Kelly, M.D.	High school	24	8	Sept	$100 yr.	Certificate
St. Catherine's Hospital, Omaha	J. F. Kelly, M.D.	High school	24	4	JanSept	None	Certificate
University of Nebraska, College of Medicine, Omaha *	H. B. Hunt, M.D.	High school	12	4	FebJuly	$90-140	Certificate
NEW HAMPSHIRE							
Mary Hitchcock Memorial Hospital, Hanover	L. K. Sycamore, M.D.	High school	12	4	AprSept	None	Certificate
Laconia Hospital, Laconia *	G. Farmlett, M.D.	High school	12	6	Varies	None	Certificate
NEW JERSEY							
Jersey City Medical Center, Jersey City *	H. J. Perlberg, M.D.	High school	12	30	FebAug	None	Certificate
Paterson General Hospital, Paterson *	E. L. Warren, M.D.	High school	15	9	Varies	None	Certificate
Mercer Hospital, Trenton	M. P. Mains, M.D.	High school	12	2	JanJune	None	Certificate
St. Francis Hospital, Trenton *	B. R. Wayman, M.D.	High school	24	4	July	$150	Certificate
NEW YORK							
Albany Hospital, Albany *	J. F. Roach, M.D.	High school	24	8	Sept	$350 yr. †	Certificate
Edward J. Meyer Memorial Hospital, Buffalo *	E. G. Eschner, M.D.	High school	24	4	July	None	Certificate
Mercy Hospital, Buffalo	C. G. Jeneczeski, M.D.	High school	24	3	Sept	$50	Diploma
Millard Fillmore Hospital, Buffalo *	J. M. Barnes, M.D.	High school	18-	4	Varies	None	....
Brooks Memorial Hospital, Dunkirk *	S. B. Clark, M.D.	High school	24	3	JanJuly	$100 †	Certificate
St. Joseph's Hospital, Elmira	H. A. Burch, M.D.	High school	24	4	FebSept	$150 †	Diploma
New York Hospital, New York *	R. P. Ball, M.D.	High school	24	18	AprOct	$500 †	Diploma
New York Polyclinic Medical School and Hosp., New York *	W. H. Shehadi, M.D.	High school	12	10	AprOct	$350	Certificate
St. Clare's Hospital, New York *	J. Evans, M.D.	High school	18	3	March	None	Certificate

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
NEW YORK—Continued							
Rochester G[illegible] Hospital, Rochester *	E. F. Merrill, M.D.	High school	12	3	FebSept	$120	Certificate
St. Mary's [illegible]	A. V. Winchell, M.D.	High school	15	4	July	None †	Certificate
Strong Mem[illegible] *	G. H. Ramsey, M.D.	High school	12	12	Quarterly	$180	Certificate
General Hospital, Syracuse *	W. S. Brooks, M.D.	High school	12	2	Varies	$50	Certificate
NORTH CAROLINA							
Cabarrus County Hospital, Concord	A. Tuggle, M.D.	High school	18	3	JanJuly	$100	Certificate
Duke University School of Medicine, Durham *	R. J. Reeves, M.D.	2 yrs. college	24	4	Oct	$50	Diploma
Watts Hospital, Durham *	W. W. Vaughan, M.D.	2 yrs. college	12	2	JulySept	$50	Certificate
Bowman Gray School of Medicine, Winston-Salem *	J. R. Andrews, M.D.	High school	12	6	FebSept	None	Certificate
City Memorial Hospital, Winston-Salem *	H. S. Adams, M.D.	High school	12	3	July	None	Certificate
Kate Bittings Reynolds Memorial Hospital, Winston-Salem *	H. S. Adams, M.D.	2 yrs. coll. or R.N.	12	2	JanJuly	None †	Certificate
NORTH DAKOTA							
Quain and Ramstad Clinic, Bismarck *	H. M. Berg, M.D.	High school	24	4	Varies	None †	Certificate
St. Alexius Hospital, Bismarck *	H. M. Berg, M.D.	High school	24	4	Varies	$50 †	Certificate
Trinity Hospital, Minot	D. L. Oltman, M.D.	High school	12	3	Varies	None †	....
OHIO							
City Hospital, Akron *	F. T. Moore, M.D.	High school	24	6	FebJuly	None †	Cert. & Dipl.
Mercy Hospital, Canton *	J. J. Douglas, M.D.	High school	12	4	Sept	$100	Diploma
Cincinnati General Hospital, Cincinnati *	B. Felson, M.D.	High school	12	7	Every 2 mo.	$75	Certificate
Our Lady of Mercy Hospital, Cincinnati *	C. M. Barrett, M.D.	High school	24	2	Varies	$75	....
City Hospital, Cleveland *	H. Hauser, M.D.	High school	12	9	Every 6 wks.	$100	Certificate
Cleveland Clinic Hospital, Cleveland *	C. R. Hughes, M.D.	High school	12	4	Every 6 mo.	None †	Certificate
Mount Sinai Hospital, Cleveland *	H. A. Mahrer, M.D.	High school	12	5	FebAug	$100	Certificate
St. Luke's Hospital, Cleveland *	D. D. Brannan, M.D.	High school	12	6	Varies	$50	Diploma
St. Vincent Charity Hospital, Cleveland *	E. J. O'Malley, M.D.	High school	12	3	Varies	$100	Certificate
University Hospitals, Cleveland *	H. L. Friedell, M.D.	High school	14	12	Monthly	$100	Certificate
Doctors Hospital, Cleveland Heights *	R. H. Thompson, M.D.	High school	12	2	Monthly	None	Certificate
Ohio State University Hospital, Columbus	H. J. Means, M.D.	High school	12	12	Varies	None †	Certificate
Good Samaritan Hospital, Dayton *	H. Snow, M.D.	High school	24	2	Every 6 mo.	None	Certificate
Miami Valley Hospital, Dayton *	G. A. Nicoll, M.D.	High school	12	4	Every 6 mo.	None	Certificate
St. Elizabeth Hospital, Dayton	H. Snow, M.D.	High school	12	4	JuneSept	None	Certificate
Huron Road Hospital, East Cleveland *	W. D. Heinrich, M.D.	High school	12	4	Varies	$100	Certificate
Elyria Memorial Hospital, Elyria *	D. A. Russell, M.D.	High school	12	2	JanJuly	None †	Certificate
Mercy Hospital, Hamilton *	T. P. Glynn, M.D.	High school	24	4	JanJune	None	Certificate
St. Rita's Hospital, Lima *	D. W. English, M.D.	High school	18	3	JanJuly	None	Certificate
St. Joseph Hospital, Lorain *	D. A. Russell, M.D.	High school	12	3	Jan	$50	Certificate
Newark Hospital, Newark *	A. D. Piatt, M.D.	High school	12	2	Sept	None	Diploma
Youngstown Hospital, Youngstown	E. C. Baker, M.D.	High school	12	5	Varies	None †	Certificate
OKLAHOMA							
Mercy Hospital, Oklahoma City *	J. R. Danstrom, M.D.	High school	24	2	MarSept	None †	Cert. & Dipl.
St. Anthony's Hospital, Oklahoma City *	B. E. Mulvey, M.D.	High school	24	6	Spring & Fall	None †	Certificate
University Hospitals, Oklahoma City *	P. E. Russo, M.D.	High school	24	4	Sept	None	Certificate
St. John's Hospital, Tulsa *	L. M. Pascucci, M.D.	High school	24	8	Varies	None †	Certificate
OREGON							
St. Anthony's Hospital, Pendleton *	D. R. Rich, M.D.	High school	12	10	Every 2 mo.	$250	Certificate
Portland Sanit. and Hospital, Portland *	A. F. Hunter, M.D.	High school	12	4	Quarterly	$100	Certificate
Univ. of Oregon Med. School Hosps. and Clinics, Portland *	W. Y. Burton, M.D.	High school	12	9	Every 6 wks.	None	Certificate
PENNSYLVANIA							
Chester Hospital, Chester	A. M. Sharpe, M.D.	High school	24	4	JanJuly	None	Certificate
Geo. F. Geisinger Memorial Hospital and Foss Clinic, Danville *	C. L. Hinkel, M.D.	High school	24	4	July	None †	Cert. & Dipl.
Fitzgerald-M[illegible]	F. K. Alexander, M.D.	High school	12	5	JulySept	None	Certificate
St. Vincent's [illegible]	R. D. Bacon, M.D.	High school	18	2	Varies	None	Certificate
Conemaugh [illegible]	C. B. Cobern, M.D.	High school	24	3	Jan	None †	....
Germantown [illegible]	B. R. Young, M.D.	High school	18	5	JanJuly	None	....
Grad. Hosp. of the Univ. of Pennsylvania, Philadelphia *	A. Finkelstein, M.D.	High school	24	12	Sept	$150	Diploma
Hahnemann Hos[illegible]	J. S. Lehman, M.D.	High school	24	16	FebAug	$150	Diploma
Hospital of the [illegible] *	E. P. Pendergrass, M.D.	High school	24	11	Sept	$250 yr.	Certificate
Jefferson Medica[illegible]	P. C. Swenson, M.D.	High school	24	9	FebOct	None †	Certificate
Jewish Hospital, Philadelphia *	J. Gershon-Cohen, M.D.	High school	24	6	JanJuly	$300	Certificate
Nazareth Hospital, Philadelphia	J. S. Fetter, M.D.	High school	24	6	Sept	None †	Certificate
Philadelphia General Hospital, Philadelphia	B. P. Widmann, M.D.	High school	18	30	FebSept	None	Diploma
Elizabeth Steel Magee Hospital, Pittsburgh *	C. N. Chasler, M.D.	High school	24	4	JulySept	None †	....
Western Pennsylvania Hospital, Pittsburgh *	R. G. Alley, M.D.	High school	12	2	MarSept	None †	Certificate
Scranton State Hospital, Scranton *	W. J. Corcoran, M.D.	High school	24	2	JuneSept	None	Certificate
West Side Hospital, Scranton *	L. A. Milkman, M.D.	High school	24	4	July	$45 mo.†	Certificate
Sharon General Hospital, Sharon *	H. A. Steiner, M.D.	High school	12	4	Varies	None	Certificate
Chester County Hospital, West Chester *	J. Gershon-Cohen, M.D.	High school	24	2	July	None	Certificate
Wilkes-Barre General Hospital, Wilkes-Barre *	P. E. Ringawa, M.D.	High school	14	4	Every 6 mo.	None	Diploma
SOUTH CAROLINA							
Anderson County Memorial Hospital, Anderson	J. J. Davis, M.D.	High school	12	4	Spring & Fall	None †	Certificate
Roper Hospital, Charleston *	H. S. Pettit, M.D.	High school	12	4	MarSept	None	Certificate
Orangeburg Hospital, Orangeburg *	G. M. Wyatt, M.D.	High school	12	2	FebJuly	None †	Certificate
Spartanburg General Hospital, Spartanburg	H. E. Plenge, M.D.	High school	12	4	MayAug	$30	Certificate
Tuomey Hospital, Sumter *	M. E. Parrish, M.D.	1 yr. college	12	2	Varies	$50	Certificate
SOUTH DAKOTA							
St. Luke's Hospital, Aberdeen *	P. V. McCarthy, M.D.	High school	12	1	Varies	None	Certificate
McKennan Hospital, Sioux Falls *	D. H. Breit, M.D.	High school	24	2	JanJuly	None	Certificate
Sioux Valley Hospital, Sioux Falls *	D. H. Breit, M.D.	High school	24	4	MarSept	None	Certificate
Sacred Heart Hospital, Yankton	J. P. Steele, M.D.	High school	24	4	FebAug	$85	Cert. & Dipl.
TENNESSEE							
Knoxville General Hospital, Knoxville *	H. H. McCampbell, M.D.	High school	12	6	Quarterly	None	Certificate
Madison Sanit. and Hospital, Madison College *	G. Johnson, M.D.	2 yrs. college	12	8	Quarterly	$180 †	Certificate
University of Tennessee College of Medicine, Memphis *	D. S. Carroll, M.D.	High school	12	8	Varies	$80	Certificate
Veterans Admin. Hospital (Kennedy), Memphis *	W. H. Mendel, M.D.	High school	24	10	Sept	None	Certificate
Meharry Medical College, Nashville *	G. J. Tarleton Jr., M.D.	2 yrs. coll. or R.N.	24	2	Sept	$135 yr.	Certificate

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificat Diploma Degree
TEXAS							
Hotel Dieu Hospital, Beaumont	L. H. Ledbetter, M.D.	1 yr. coll. or R.N.	12	3	JuneSept	None	Certificat
Baylor University Hospital, Dallas *	J. E. Miller, M.D.	High school	18	12	Monthly	None	Diploma
Methodist Hospital, Dallas *	R. H. Millwee, M.D.	High school	12	2	MaySept	None	Certificat
Parkland Hospital, Dallas *	R. S. Clayton, M.D.	High school	18	12	Monthly	None	Certificat
St. Paul's Hospital, Dallas *	G. D. Carlson, M.D.	High school	12	4	JanJuly	None	Diploma
Veterans Admin. Hospital, Dallas *	J. J. Sazama Jr., M.D.	High school	18	3	Every 6 mo.	None	Certificat
All Saints Hospital, Fort Worth *	E. W. Spackman, M.D.	High school	24	8	Varies	None †	Diploma
University of Texas Medical Branch, Galveston *	J. C. Rude, M.D.	High school	12	8	FebSept	$100	Certificat
Hermann Hospital, Houston *	L. M. Vaughan, M.D.	High school	12	6	JanJuly	$50 †	Certificat
Methodist Hospital, Houston *	C. H. Burge, M.D.	High school	12	2	July	None †	....
St. Joseph's Infirmary, Houston *	P. Wigby, M.D.	High school	24	8	Every 6 mo.	None †	Certificat
Santa Rosa Hospital, San Antonio	M. Davis, M.D.	High school	24	4	JuneSept	$50	Certificat
Scott and White Hospital, Temple *	C. A. Stevenson, M.D.	High school	24	3	Varies	None †	Certificat
UTAH							
St. Benedict's Hospital, Ogden *	L. P. Matthei, M.D.	High school	24	3	JanSept	$30 †	Certificat
Salt Lake County General Hospital, Salt Lake City *	H. P. Plenk, M.D.	2 yrs. college	12	4	JanJuly	$200	Certificat
VERMONT							
Mary Fletcher Hospital, Burlington *	A. B. Soule Jr., M.D.	High school	24	8	Quarterly	$250 †	Diploma
VIRGINIA							
University of Virginia Hospital, Charlottesville *	V. W. Archer, M.D.	2 yrs. college	12	6	MarSept	None	Certificat
Riverside Hospital, Newport News *	B. Miller, M.D.	High school	18	2	MarSept	None †	Certificat
Medical College of Virginia Hospital Division, Richmond	F. B. Mandeville, M.D.	High school	12	24	Varies	None	Certificat
St. Luke's Hospital, Richmond	J. L. Tabb, M.D.	High school	12	2	Varies	None †	Certificat
WEST VIRGINIA							
St. Luke's Hospital, Bluefield *	D. V. Kechele, M.D.	High school	12	3	JanJune	None	Certificat
Kanawha Valley Hospital, Charleston	J. D. Kugel, M.D.	High school	12	1	June	None	Diploma
McMillan Hospital, Charleston	W. P. Elkin, M.D.	High school	12	1	Feb	None †	Certificat
St. Francis Hospital, Charleston	W. P. Elkin, M.D.	High school	12	1	Oct	None	Diploma
WISCONSIN							
St. Joseph's Hospital, Ashland	D. H. Burns, M.D.	High school	24	4	Fall	None †	Diploma
Mercy Hospital, Janesville *	W. T. Clark, M.D.	High school	24	4	Sept	None	Certificat
St. Francis Hospital, La Crosse	P. V. Hulick, M.D.	High school	24	3	August	$50 †	Certificat
Madison General Hospital, Madison *	R. C. Schmitz, M.D.	High school	12	6	Varies	None †	Diploma
St. Mary's Hospital, Madison	C. F. Sherman, M.D.	High school	24	4	Sept	None	Certificat
University of Wisconsin Medical School, Madison *	E. A. Pohle, M.D.	1 yr. college	12	16	Every 6 wks.	$5.50 per semester	Certificat
Columbia Hospital, Milwaukee *	S. A. Morton, M.D.	High school	24	4	JanJuly	None †	Certificat
Evangelical Deaconess Hospital, Milwaukee *	A. Melamed, M.D.	High school	12-24	6	Quarterly	$100 †	Diploma
Milwaukee Hospital, Milwaukee *	H. Hefke, M.D.	High school	24	6	Quarterly	None †	Certificat
Mount Sinai Hospital, Milwaukee *	M. Moel, M.D.	High school	12	5	Quarterly	$100	Certificat
St. Joseph's Hospital, Milwaukee *	A. R. Altenhofen, M.D.	High school	24	16	Varies	$50	Certificat
St. Michael's Hospital, Stevens Point *	R. H. Sanders, M.D.	High school	12	4	FebAug	None	Certificat
St. Mary's Hospital, Wausau *	J. M. Foerster, M.D.	High school	24	5	Sept	$65	Diploma

† Students are paid a stipend.

SCHOOLS OF PHYSICAL THERAPY

In view of the continued shortage of ancillary personnel in physical therapy and occupational therapy, the Council on Medical Education and Hospitals was requested by the Council on Physical Medicine and Rehabilitation of the American Medical Association to encourage the development of additional courses in these fields in teaching hospitals affiliated with medical schools. Other agencies have also reported shortages and there is every indication that future demands for physical therapists and occupational therapists will increase substantially.

Acting on this suggestion, the Council on Medical Education and Hospitals at its meeting in Cleveland, December 4, 1950, voted that a letter be sent to each medical school calling attention to the need for further facilities for the training of physical therapists and occupational therapists. From the replies to this communication and a subsequent survey conducted by the Council on Physical Medicine and Rehabilitation, it has been ascertained that eighteen medical schools, not already approved in this field, are now considering the establishment of training programs in physical therapy. Those medical schools already operating physical thera schools have advised that they are cognizant of curre shortages and are prepared to maintain enrolments at t highest level consistent with good teaching. In so schools requests have been made to university officia for budget increases to meet anticipated needs in t field.

Because of this excellent cooperation it is expecte that the next year will show a considerable increase in t number of acceptable physical therapy schools.

The list herewith presented contains the names of 3 schools, an increase of 17 since publication of the fir approved list in THE JOURNAL A. M. A. August 29, 193 The currently approved schools reported an enrolment 683 students and during the year 1950 there were 39 graduates in the regular course and 96 in the graduat course. As reported last year, courses are so arrange that various entrances requirements qualify students f training. These include graduation from an accredite school of nursing, graduation from an accredited schoo of physical education or two or more years of colleg with satisfactory courses in biological and physical sci ences. When high school graduates are admitted to courses sponsored by colleges or universities, a degree is granted after completion of the prescribed college and technical training. Attention is directed to the accompanying list showing the duration of each course—it will be noted that some schools maintain two separate training programs.

Application for approval of physical therapy schools should be made to the Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago 10. Forms will be supplied on request. Inquiries regarding the registration of qualified therapists should be addressed to the American Registry of Physical Therapists, 30 North Michigan Avenue, Chicago 10.

APPROVED SCHOOLS OF PHYSICAL THERAPY

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Medical Director and Technical Director	Entrance Requirements [1]	Duration of Course	Classes Begin	Maximum Enrolment	Tuition	Certificate, Diploma, Degree
Medical Department—U. S. Army (Address all inquiries to the Office of the Surgeon General, Department of the Army, Washington 25, D. C.)							
Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston (San Antonio), Texas	J. E. Tate, Lt. Col., M.C. Agnes P. Snyder, Maj., WMSC	b-e	44 wks.	Oct	20	None	Certificate
Fitzsimons Army Hospital, Denver	H. B. Luscombe, Col., M.C. Olena M. Cole, Maj., WMSC.	Affiliated with Medical Field Service School					
Walter Reed Army Hospital, Washington, D. C	J. H. Kuitert, Lt. Col., M.C. Brunetta Kuehlthau, Maj., WMSC	Affiliated with Medical Field Service School					
Nonfederal							
Childrens Hospital, Los Angeles*	S. S. Matthews, M.D. Sarah S. Rogers	a-b-d	14 mos.	Sept	14	$300	Cert. or Degree
College of Medical Evangelists, Los Angeles*	F. B. Moor, M.D. R. Wm. Berdan	a-b-c	15 mos.	Sept	16	$300	Cert. or Degree
University of Southern California, Los Angeles*	C. L. Lowman, M.D. Charlotte W. Anderson	a-b-d f	14 mos. 4 yrs.	Sept FebSept	16 6	Univer. Univer.	Certificate Cert. & Degree
University of California School of Medicine, San Francisco*	Lucile Eising, M.D. Margery L. Wagner	d	12 mos.	Sept	16	$220[2]	Cert. or Degree
Stanford University, Stanford University, Calif.*	W. H. Northway, M.D. Lucille Daniels	a-d-e f	12 mos. 4 yrs.	Varies Sept	29 16	$690 $220 qr.	Certificate Degree
University of Colorado Medical Center, Denver*	Harold Dinken, M.D. Mary Lawrence	a-b-d	12 mos.	Sept	12	$208[2]	Cert. or Degree
Northwestern University Medical School, Chicago	E. D. W. Hauser, M.D. Gertrude Beard	a-b-d	12 mos.	Oct	16	$450	Certificate
State University of Iowa College of Medicine, Iowa City*	W. D. Paul, M.D. Olive C. Farr	e	12 mos.	Sept	20	$200	Certificate
University of Kansas Medical Center, Kansas City, Kan.*	D. L. Rose, M.D. Ruth G. Monteith	d f	12 mos. 4 yrs.	FebSept FebSept	3 9	$40[2] $40[2]	Certificate Degree
Simmons College, Boston	W. T. Green, M.D. Janet B. Merrill	a-e f	16 mos. 4½ yrs.	Sept Sept	24	College	Diploma Degree
Boston University College of Physical Education for Women, Sargent College, Cambridge, Mass	Kenneth Christophe, M.D. Adelaide L. McGarrett	c-d-e-f	1-2-4 yrs.	Sept	30	Univer.	Cert. or Degree
Bouve-Boston School of Physical Education, Medford, Mass.	Howard Moore, M.D. Constance K. Greene	f	4 yrs.	Sept	16	$550	Dipl. & Degree
University of Minnesota, Minneapolis*	F. J. Kottke, M.D. Ruby M. Green	c	2 yrs.	Sept	20	$126	Degree
Mayo Clinic, Rochester, Minn.*	E. C. Elkins, M.D. Harry Keown	a-b-c	2 yrs.	Sept	38	$250	Certificate
St. Louis University, Division of Health and Hospital Services, St. Louis*	A. J. Kotkis, M.D. Sister Mary Imelda	f	4 yrs	JanSept	12	$175 Semes.	Degree
Washington University School of Medicine, St. Louis*	Sedgwick Mead, M.D. Beatrice F. Schulz	c	2 yrs.	Sept	16	$450 1st yr. $325 2d yr.	Degree
Albany Hospital, Albany, N. Y.	J. W. Ghormley, M.D. Catharine Graham	a-b-d f	12 mos. 4 yrs.	Sept Sept	6	$300 $500	Certificate Degree
Columbia University College of Physicians and Surgeons, New York City*	W. B. Snow, M.D. Floy L. Pinkerton	a-c-e	1-2 yrs.	Sept	50	$680 (1 yr.) $1,200 (2 yrs.)	Cert. or Degree
New York University School of Education, New York City*	G. G. Deaver, M.D. Elizabeth C. Addoms	a (+1 yr. coll.) b-d	12 mos.	Sept	40	$615	Cert. & Degree
Duke University, Durham, N. C.*	L. D. Baker, M.D. Helen Kaiser	a-b-d	15 mos.	Oct	12	$350	Certificate
Cleveland Clinic Hospital, Cleveland*	S. G. Gamble, M.D. Mildred Heap	a-b c	12 mos.	Oct	12	$200	Diploma
D. T. Watson School of Physical Therapy, Leetsdale, Pa.*	Jessie Wright, M.D. *Kathryn Kelley*	a-b-d	12 mos.	Oct	25	$300	Diploma
Division of Physical Therapy of the School of Auxiliary Medical Services of the University of Pennsylvania, Philadelphia*	G. M. Piersol, M.D. Dorothy E. Baethke	e f	12 mos. 4 yrs.	FebSept Sept	32 40	$600 $600	Certificate Cert. & Degree
University of Texas School of Medicine, Galveston*	G. W. N. Eggers, M.D. Ruby Decker	a-b-d	12 mos.	Jan	8	$149[2]	Cert. or Degree
Hermann Hospital, Houston, Texas*	O. O. Selke Jr., M.D. Mary Elizabeth Kolb	a-b-d	12 mos.	Oct	15	$300	Certificate
Baruch Center of Physical Medicine and Rehabilitation, Medical College of Virginia, Richmond*	W. J. Lee, M.D. Susanne Hirt	a-b-d f	12 mos. 4 yrs.	Sept Sept	52	$300[2]	Diploma Degree
University of Wisconsin Medical School, Madison*	H. D. Bouman, M.D. Margaret A. Kohli	a-b-d f	12 mos. 4 yrs.	Sept FebSept	22 20	$60 Semes.[2]	Certificate Cert. & Degree

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[1] Courses are so arranged that any of the entrance requirements will qualify students for training. a = Graduation from accredited school of nursing; b = Graduation from accredited school of physical education; c = Two years of college with science courses; d = Three years of college with science courses; e = Four years of college with science courses; f = High school graduation.

[2] Nonresidents charged additional fee.

* Male as well as female students admitted.

SCHOOLS OF OCCUPATIONAL THERAPY

The latest revision of the Council's standards in occupational therapy was adopted by the House of Delegates of the American Medical Association in December 1949. These changes, related chiefly to the organization of the faculty, medical direction of the clinical training program and the planning of the school curriculum, were made with the assistance of the Council on Physical Medicine and Rehabilitation of the American Medical Association and the American Occupational Therapy Association. At present there are 24 schools approved in accordance with these standards, a total identical with the report of last year. However, while the number of training programs remained unchanged, the enrolments in the approved schools increased from 1,619 in 1949 to 1,893 in 1950. This latter figure represents the total number of students in all courses offered, which variously are designated as diploma, certificate or degree courses. It may also be noted that the number of graduates increased in the last year from 316 to 377.

Although the number of students and graduates has increased, there is still a critical shortage of technical personnel in occupational therapy. This problem is further accentuated by present emergency needs both in civilian and military services. The American Occupational Therapy Association has conducted an intensive recruitment program and every effort has been made to promote the development of additional schools. In this connection, the Council on Physical Medicine and Rehabilitation recommended at its meeting in December 1950 that the Council on Medical Education and Hospitals encourage the development of additional courses in occupational therapy in the teaching hospitals affiliated with medical schools. Acting on this suggestion a letter was sent to all medical schools calling attention to the need for further educational facilities in occupational therapy. As a result of these efforts thirteen medical schools, not previously engaged in occupational therapy training, are now considering the establishment of educational services in this field.

Present demands for occupational therapy personnel may also necessitate the establishment of accelerated or emergency courses, particularly in relation to military requirements. Every consideration is now being given to this matter and there is complete assurance that the schools currently approved by the Council will cooperate to the fullest extent.

Application for approval of occupational therapy schools should be made to the Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago 10. Forms will be sent on request. Inquiries regarding registration of qualified therapists should be addressed to the American Occupational Therapy Association, 33 West 42d Street, New York 18.

APPROVED SCHOOLS OF OCCUPATIONAL THERAPY

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Director and Medical Director	Entrance Require-ments	Duration of Course[1]	Classes Begin	Grad-uates in 1950	Tuition per Year	Certific Diplon Degre
University of Southern California, Los Angeles *	Margaret S. Rood	Degree	18 mos.	Varies	12	$594	Certifica
	J. B. Armstrong, M.D.	High sch.	5 yrs.	Varies	19	$540	Cert. &
Mills College, Oakland, Calif.	Elsa H. Hill	Degree	2½ yrs.	FebSept	2	$250	Certifica
	S. M. Dorinson, M.D.	High sch.	5 yrs.	FebSept	4	$650	Cert. &
San Jose State College, San Jose, Calif.*	Mary D. Booth	Degree	18 mos.	Varies	1	$ 28.50	Certifica
	Charles Ianne, M.D.	*High sch.*	*45 mos.*	*Varies*	*13*	$ 28.50	Cert. &
University of Illinois College of Medicine, Chicago *	Beatrice D. Wade	High sch.	5 yrs.	MarSept	13	$110	Degree
	S. W. Olson, M.D.	....	....	....	..	......	....
State University of Iowa, Iowa City *	*Marguerite McDonald*	....	19 mos.	FebSept	2	$144 [2]	Certifica
	W. D. Paul, M.D.	High sch.	46 mos.	FebSept	5	$144 [2]	Cert. &
University of Kansas, Lawrence	Nancie B. Greenman	High sch.	45 mos.	FebSept	16	$135 [2]	Degree
	D. L. Rose, M.D.	....	....	....	..	......	....
Boston School of Occupational Therapy, 7 Harcourt St., Boston *	Marjorie B. Greene	Degree	2 yrs.	Sept	13	$500	Diploma
	A. W. Reggio, M.D.	High sch.	5 yrs.	Sept	21	$500	Degree
Wayne University, Detroit *	Barbara Jewett	Degree	19 mos.	Varies	1	$150	Certifica
	F. A. Weiser, M.D.	High sch.	46 mos.	Varies	2	$150	Degree
Kalamazoo School of Occupational Therapy, Kalamazoo, Mich.*	Marion R. Spear	Degree	18 mos.	FebSept	3	$ 75 [2]	Diploma
	R. B. Burrell, M.D.	1 yr. coll.	4 yrs.	*FebSept*	*23*	*$ 75 [2]*	*Dipl. &*
Michigan State Normal College, *Ypsilanti, Mich.**	*Frances Herrick*	High sch.	5 yrs.	FebSept	6	$ 67.50 [2]	Cert. &
	V. L. VanDuzen, M.D.	....	....	....	..	......	....
University of Minnesota, Minneapolis *	Borghild Hansen	High sch.	40 mos.	Sept	12	$126 [2]	Degree
	F. J. Kottke, M.D.	....	....	....	..	......	....
College of St. Catherine, 2004 Randolph, St. Paul	Sister Jeanne Marie	High sch.	4½ yrs.	Varies	24	$225	Degree
	J. M. Ryan, M.D.	....	....	....	..	......	....
Washington University School of Medicine, St. Louis *	Erna L. Rozmarynowski	*Degree*	11-14 mos.	Sept	..	*University*	*Certifica*
	R. A. Moore, M.D.	2 yrs. coll.	28 mos.	Sept	14		Degree
University of New Hampshire, Durham *	Esther Drew	High sch.	5 yrs.	Sept	8	$200 [2]	Cert. &
	J. A. MacDonald	....	....	....	..	......	....
Columbia University College of Physicians and Surgeons, New York City *	Marjorie Fish	Degree	17 mos.	Sept	20	$600	Certifica
	W. B. Snow, M.D.	2 yrs. coll.	27 mos.	Sept	10	$600	Degree
New York University School of Education, New York City *	Frieda J. Behlen	1 yr. coll.	....	FebSept	3	$500	*Certifica*
	John Sawhill, M.D.	High sch.	4½ yrs.	FebSept	26	$500	Cert. &
Ohio State University, Columbus *	Martha E. Jackson	High sch.	4 yrs.	Varies	15	*$ 90 [2]*	*Degree*
	R. H. Jacques, M.D.	....	....	....	..	......	....
Philadelphia School of Occupational Therapy of the School of Auxiliary Medical Services of the University *of Pennsylvania, Philadelphia* *	Helen S. Willard	Degree	18 mos.	Sept	21	$600	Certificat
	J. C. Yaskin, M.D.	*High sch.*	*5 yrs.*	*Sept*	*1*	$600	*Degree*
Texas State College for Women, Denton	Fanny B. Vanderkooi	Degree	18 mos.	FebSept	..	......	Certificat
	O. T. Woods, M.D.	High sch.	5 yrs.	FebSept	5	$ 50	Degree
Richmond Professional Institute, 901 W. Franklin St., Richmond, Va.*	H. Elizabeth Messick	High sch.	4 yrs.	Sept	5	$200	*Degree*
	J. E. Barrett, M.D.	Degree	10-18 mos.	FebSept	4	$182+	Certificat

APPROVED SCHOOLS OF OCCUPATIONAL THERAPY—Continued

Name and Location of School	Director and Medical Director	Entrance Require-ments	Duration of Course[1]	Classes Begin	Grad-uates in 1950	Tuition per Year	Certificate, Diploma, Degree
College of Puget Sound, 18th and Warner Sts., Tacoma, Wash.*	Edna-Ellen Bell A. J. Hermann, M.D.	.... High sch.	2 yrs. 5 yrs.	FebSept FebSept	.. 5	$400 $350	Certificate Cert. & Deg.
University of Wisconsin, Madison *	Caroline G. Thompson H. D. Bouman, M.D.	High sch.	5 yrs.	Sept	12 ..	$120 [2]	Cert. & Deg. ....
Milwaukee-Downer College, Dept. of Occupational Therapy, 2512 E. Hartford Ave., Milwaukee	Henrietta W. McNary M. C. Borman, M.D.	2 yrs. coll. High sch.	3 yrs. 5 yrs.	Sept Sept	2 20	$350 $350	Diploma Dipl. & Deg.
Mount Mary College, 92d and Burleigh, Milwaukee	Sister Mary Arthur J. C. Griffith, M.D.	High sch.	5 yrs.	Sept	14 ..	$260	Cert. & Deg. ....

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1. Duration of course is expressed in academic years or in number of months.
2. Nonresidents charged additional fee.
* Male as well as female students admitted.

SCHOOLS FOR MEDICAL RECORD LIBRARIANS

The original Essentials of an Acceptable School for edical Record Librarians were officially adopted by the ouse of Delegates in 1943, subsequent revisions being ade in 1945 and 1949. The number of approved hools has increased from 10 in 1943 to 18 in 1950. uring the past year two new schools were added to the st while one course was discontinued. In this latter eriod, also, there was a maximum enrolment of 157 udents, an increase of 14 over the previous year. A tal of 83 graduates was reported for 1950, as comared with 67 in 1949.

The accompanying list gives the name and location of ach school, the individual in charge of the training proram, the duration of training, the opening date, maxiium enrolment, tuition and type of certification on comletion of the course. Under the present standards, cceptable schools for the training of medical record brarians may be conducted by general hospitals having dequate teaching material and personnel. Approval may lso be extended to colleges, universities and medical chools having suitable hospital facilities. In view of the ontinuing shortage of qualified personnel in this field very effort is being made to encourage the development of additional educational facilities, particularly in areas where schools are not adequately represented at the present time. There is evidence of increased interest in this field as additional hospitals are seeking information on the establishment of suitable training programs. For the workers already in the field opportunities for continued education are being provided through well organized regional institutes and inservice training programs.

Application for approval should be made to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10. Special forms will be supplied for this purpose and when the required information has been received the proposed training program will be reviewed in collaboration with the Council on Education of the American Association of Medical Record Librarians. The institutions applying for Council approval will, in all instances, receive full information and every possible assistance in the planning and development of training programs in accordance with present standards. Inquiries regarding the registration of qualified medical record librarians should be addressed to the American Association of Medical Record Librarians, 510 North Dearborn Street, Chicago 10.

APPROVED SCHOOLS FOR MEDICAL RECORD LIBRARIANS

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Director	Entrance Requirements†	Duration of Course	Classes Begin	Maximum Enrolment	Tuition	Certificate, Diploma, Degree
Herrick Memorial Hospital, Berkeley, Calif.*	Margaret Y. McLaughlin	2 yrs. college	12 mos.	Varies	5	$150	Certificate
Samuel Merritt Hospital, Oakland, Calif*	Alice K. Swearingen	2 yrs. coll. or R. N.	12 mos.	March	5	$150	Certificate
Univ. of Colorado School of Med. & Hosps., Denver*	Ruby M. Williamson	High school	4 yrs.	JuneSept	16	Univer.	Degree
Grant Hospital, Chicago*	Mary J. Bitter	2 yrs. coll. or R. N.	12 mos.	FebSept	8	$215	Certificate
Wesley Memorial Hospital, Chicago	Marjorie R. Quandt	2 yrs. coll. or R. N.	12 mos.	Sept	8	$275	Certificate
Indiana University Medical Center, Indianapolis*	Gertrude L. Gunn	3 yrs. college	12 mos.	June	22	Univer.	Degree
U. S. Marine Hospital, Baltimore*	John L. Wilson, M.D.	2 yrs. college	12 mos.	Sept	12	None	Certificate
Massachusetts General Hospital, Boston*	E. Louise Seymour	2 yrs. coll. or R. N.	12 mos.	Sept	8	$150	Certificate
Mount Carmel Mercy Hospital, Detroit	Sister Mary Pauline	2 yrs. college	12 mos.	Sept	6	$150	Diploma
College of St. Scholastica, Duluth, Minn.	Patricia J. Pierce	High school	4½ yrs.	Sept	10	$150	Degree
Homer G. Phillips Hospital, St. Louis*	Esther M. Sherard	2 yrs. coll. or R. N.	12 mos.	Sept	4	$150	Certificate
St. Louis University, St. Louis*	Sister Mary Servatia	High school	4 yrs.	FebSept	10	$175 Semes.	Degree
St. Michael's Hospital, Newark, N. J.	Sister Maria Consilia	2 yrs. coll. or R. N.	12 mos.	Sept	5	$100	Certificate
St. Mary's Hospital, Brooklyn*	Sister Mary Laurentia	2 yrs. coll. or R. N.	12 mos.	Sept	6	$150	Certificate
Duke Hospital, Durham, N. C.*	Je Harned Bufkin	Degree	12 mos.	JuneOct	6	$175	Certificate
Graduate Hosp. of the Univ. of Penn., Philadelphia	Gertrude Hanauer	2 yrs. coll. or R. N.	12 mos.	Sept	16	$300	Certificate
St. Anthony's Hospital, Amarillo, Texas*	Sister Mary of Jesus	2 yrs. coll. or R. N.	12 mos.	Sept	4	$150	Certificate
Providence Hospital, Seattle, Wash.*	Sister Peter Olivaint	2 yrs. coll. or R. N.	12 mos.	Sept	6	$150	Certificate

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* Male as well as female students admitted.
† All students are required to be proficient in typing and shorthand.

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MEMBERSHIP AND FELLOWSHIP CARDS

Every effort is being made to see that all 1951 A. M. A. membership cards are in the hands of members in time for the annual session in Atlantic City, N. J., June 11-15. Fellowship cards may not reach Fellows in time for the Atlantic City session because of additional clerical work involved in checking membership dues received. However, a special arrangement will be made at the annual session registration desk for Fellows who have sent in fellowship dues but who have not yet received pocket cards. Such physicians may apply at windows reserved for Fellows. Clerks will have an up-to-date listing of Fellows and will be able to complete registration even without fellowship cards. Both members and Fellows who wish to speed up registration at the annual session may write to the American Medical Association for an advance registration form.

HOSPITAL SERVICE IN THE UNITED STATES

The annual hospital report of the Council on Medical Education and Hospitals, published in this issue of THE JOURNAL, reveals again a continued increase in the volume of hospital service in the United States. In 1950 the total number of patients admitted in the hospitals registered by the American Medical Association was 17,023,513, an increase of 363,540 over the previous year. Gains were made in both the governmental and nongovernmental divisions but were more pronounced in the latter group, which reported a net increase of 304,955 compared with 58,585 in the governmental hospitals. It is further shown that the nongovernmental hospitals received 12,706,143, or nearly 75 per cent of all patients admitted, whereas the governmental institutions had 4,317,370, or 25 per cent. None of these figures include hospital births, which numbered 2,815,806, compared with the all-time record of 2,837,139 in 1947.

The general hospitals offer the greatest volume of service, as indicated by the report of 15,830,170 admissions and 2,739,212 births in 1950. These totals represent 93 per cent of all patients admitted and 97 per cent of the hospital births. Together the general hospitals reported an average daily census of 433,364. This represents nearly 35 per cent of the daily patient load in all registered hospitals. In the psychiatric division the admissions, which numbered 307,165, or 1.8 per cent, do not give a full indication of the extensive service carried out in this field. It is necessary, therefore, to take into consideration that the psychiatric hospitals maintain an average daily census of 687,567, which is greater than the patient load in all other hospitals combined. For the most part the hospitalization of psychiatric patients is a public responsibility, as evidenced by the daily census report of 670,578 in the governmental hospitals compared with 16,989 in the nongovernmental group. In the tuberculosis hospitals the admission total of 113,275 is practically identical with the report of last year. Here, also, the hospitalization is largely a governmental function, inasmuch as the nongovernmental hospitals reported a census of only 8,502 out of a total of 72,370. The average daily census of 1,242,777 in all registered hospitals represents a total of 453,613,605 patient days, including 158,177,860 in the general hospital group, 250,961,955 in the psychiatric institutions, 26,415,050 in tuberculosis hospitals and 18,058,740 in other units.

With further reference to the volume and type of hospital service, it is shown in this report that 7,118,305 patients received operative treatment in 1950. This represents 43 per cent of the total patients admitted in the hospitals reporting. In the general hospitals alone the number was 6,763,900, or 45 per cent of the corresponding admissions.

The registered hospitals reported a total of 1,456,912 beds. These include 1,037,041 in the governmental division and 419,871 in the nongovernmental group. As in the previous report, 40 per cent are distributed in general hospitals, 49 per cent in psychiatric institutions, 5.8 in tuberculosis hospitals and 5.2 in other groups. The average bed occupancy increased in the last year fro 85.1 to 85.3 per cent. The nongovernmental gro showed an actual reduction, however, from 74.7 to 74. but the governmental hospitals advanced from 89.3 89.8. In this section the highest rate, 95.1 per cent, w in the state hospitals, which give their major service psychiatric care. Again, for the second year, there h been a reduction in the bed occupancy in general hosp tals, which now averages 73.7 per cent. The averag length of stay in the general hospitals has been reduce to 10 days. There is considerable variation, however, a the federal general hospitals report 26.5 days, the othe governmental hospitals 11.3 to 15 days, the church an other nonprofit hospitals 8.1 and the proprietary institutions 5.9.

The hospital field has been generous in its support o educational activities, and many institutions are participating in the training of medical students, interns, resident physicians, student nurses, technicians and othe hospital personnel. At present 824 hospitals are approved for internships and 1,102 for residency training Accredited professional schools of nursing, now conducted in 1,106 hospitals, have a student enrolment o 102,611. In addition, there are 318 hospital schools o practical nursing in which 5,971 students are now i training. The technical fields are represented by 46 approved schools of medical technology, 30 schools o physical therapy, 24 schools of occupational therapy, 1 schools for medical record librarians and 283 schools fo x-ray technicians. It should be noted that, in all activities associated with hospital and educational services, th individual hospitals are constantly striving to improv the standards and quality of patient care.

ECHNICAL PERSONNEL

Included in the present report on Hospital Service in ie United States is a section devoted to medical techology, x-ray technique, physical therapy, occupational ierapy and medical record library science. These serices have become essential adjuncts in the hospitaliation and care of the sick and are steadily increasing i demand. Shortages of well trained technical personnel xist in all divisions and have been termed critical in ome fields particularly in view of present emergency ieeds and the additional demands created by new and idvanced methods of therapy and rehabilitation. For nany years the Council on Medical Education and Hositals and the national organizations representing the arious technical fields have cooperated closely in the levelopment, organization and standardization of acceptable training programs and have made every effort to ncourage the establishment of additional schools in hositals, colleges and universities whenever suitable facilities are available. The need in physical therapy and ccupational therapy has recently been called to the ttention of medical schools, and there has already been promising response to the request that new training rograms be developed or that existing educational serices be further expanded in the associated teaching hositals. In the period 1947-1950 the approved schools of nedical technology increased from 337 to 467 and the nnual number of graduates from 1,206 to 2,011. Similarly, in the field of x-ray technique the schools advanced from 211 to 283 with a corresponding increase in the number of graduates from 499 to 923. The field of medical record library science reported 12 schools and 63 graduates in 1947, whereas the present survey showed totals of 18 and 83, respectively. Occupational therapy, with 24 schools and approximately 400 graduates, has shown relatively little change in the last three years, but in physical therapy the schools advanced from 25 to 30 and the total graduates from 403 to 490. In the technical fields the Council is receiving the full cooperation of the respective national agencies and continued progress is being made in the standardization of educational programs. At present, comprehensive surveys are being carried out in reference to schools of medical technology and x-ray technique. Cooperating actively in these studies are the Board of Schools of Medical Technology of the American Society of Clinical Pathologists and the American College of Radiology.

NEWER TECHNIQUES FOR EXAMINATIONS

In recent years, examinations to determine intelligence, aptitudes and accomplishments have been used more and more widely. For practical reasons, such examinations are usually of the objectively scored type. The adoption of objective techniques by certain specialty boards has demonstrated their usefulness and reliability. It is not surprising, therefore, to learn that the National Board of Medical Examiners is studying the advisability of changing to the multiple-choice type of examination and will try out such an examination in pharmacology and in internal medicine this spring.[1]

An important advantage of objectively scored examinations is the number of items that can be included and the resultant better sampling of the candidate's field of knowledge. Furthermore, the uniformity of grading standards, which is automatic with objective scoring, eliminates such irrelevant factors as the weight subconsciously or consciously given to penmanship, spelling, degree of conciseness and organization and incidental references to theories or authorities especially acceptable to the particular grader. There is also elimination of the inevitable shifts in criteria when a complex judgment must be made.

Objections to this type of examination are frequently raised. It is said that such tests cannot measure the candidate's organizational ability, that they measure simple recall of isolated information and that they penalize the really thoughtful and informed student who does not have an opportunity to explain qualifications. Such criticisms are valid in those instances in which the examinations are either carelessly or, with the best of intentions, ignorantly constructed. Considerable experience in the science of tests and measurements has shown that with proper precautions and controls it is feasible to construct examinations that measure more directly and more reliably the candidate's competency in a given field. One of the main problems in designing such a test is encountered in the analysis of the factual information, the general principles and types of skills that are relevant to the practice of medicine. After adequate analysis of the requisite types of competence to be tested for, it is possible to design carefully controlled test situations in which the demonstration of these is required.

EFFECT OF CORTISONE AND ACTH ON ERYTHROCYTE SEDIMENTATION RATE

Both cortisone and pituitary adrenocorticotropic hormone (ACTH) have produced dramatic alterations in the metabolic process of organisms; among the conditions in which these hormones have been employed successfully is rheumatoid arthritis. A common index used in the evaluation of the state of activity of this disease is the rate at which sedimentation of the erythrocytes from the blood takes place. The factors that influence this sedimentation rate are numerous, though the concentration of both fibrinogen and gamma globulin in the blood exerts a major effect on this rate. Recently, Vaughan, Bayles and Favour [1] correlated the gamma globulin and fibrinogen levels with the erythrocyte sedimentation rate in the blood of patients with active rheumatoid arthritis and scleroderma who were receiving either cortisone or pituitary adrenocorticotropic hormone as the therapeutic agent. It was found that these hormones depress the level of both gamma globulin and fibrinogen in the blood. These investigators believe that the changes in concentration of the two proteins were sufficient to cause the alteration in erythrocyte sedimentation rate following hormone therapy. It is suggested, at least for the present, that the sedimentation rate might be used, as the eosinophil count is used, as an index of continued hormonal activity and not as a criterion of the effectiveness of the hormone in reducing disease activity.

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1. Hubbard, J. P.: Consideration of Newer Techniques for the National Board Examinations, The Diplomate 23: 97 (March) 1951.

1. Vaughan, J. H.; Bayles, T. B., and Favour, C. B.: Effect of 17-Hydroxy-11 Dehydrocorticosterone and Adrenocorticotropic Hormone upon Plasma Gamma Globulin, Fibrinogen, and Erythrocyte Sedimentation Rate, Proc. Soc. Exper. Biol. & Med. 76: 274 (Feb.) 1951.

ORGANIZATION SECTION

From time to time correspondence received at American Medical Association headquarters offices will be reproduced with their replies when it is believed that this correspondence will be of general interest to the readers of THE JOURNAL.

FROM THE SECRETARY'S OFFICE.

SUBCOMMITTEE ON HEALTH

George F. Lull, M.D.
Secretary and General Manager
American Medical Association
Chicago

Dear Dr. Lull:

When Dr. Bauer was in Washington recently he advised me that the American Medical Association would be glad to cooperate in the work of the Subcommittee on Health by participating in discussions of problems on the subcommittee's agenda.

I am writing at Dr. Bauer's suggestion to request you to designate representatives (I would think that five or six would be adequate) to meet in Washington on May 9th with the staff of the subcommittee. Among the matters which will be discussed will be the following: the availability of adequate medical care for wives and dependents of enlisted men in the growing armed forces; the availability of adequate medical care for workers in the increasing number of defense areas; problems of coordination of hospital, convalescent and domiciliary activities and programs of the departments and agencies of the federal government.

I would appreciate it if you will advise me of the names of those who might participate in this meeting in behalf of the American Medical Association.

I appreciate very much the desire of the Association to be of assistance to the subcommittee in its work.

Herbert H. Lehman.

Senator Herbert H. Lehman,
United States Senate,
Committee on Labor and Public Welfare,
Washington, D. C.

Dear Senator Lehman:

This will acknowledge your letter of April 23, inviting the American Medical Association to designate five or six representatives to meet in Washington, D. C., on May 9 with the staff of the Subcommittee on Health of the Committee on Labor and Public Welfare. I am happy to accept your invitation on behalf of the Association. The following representatives have been appointed to consult with your staff: Drs. Harvey B. Stone, Walter B. Martin, James R. McVay, Dwight H. Murray and Ernest B. Howard.

In order to avoid any possible misunderstanding about the implications of this meeting, may I call your attention to the fact that the Board of Trustees and its Advisory Committee on Legislation, and the House of Delegates of the Association are the only official bodies in the Association which can take a definite stand on federal legislation.

May I ask where this meeting will convene and at what time.

Sincerely,
George F. Lull, M.D., Secretary.

AN ANSWER TO THE DEUTSCH ARTICLE

By now most physicians have read or heard about an article in the May issue of *Woman's Home Companion* called "Trouble in Our Hospitals." It is Albert Deutsch's latest contribution to the popular press. The day after the magazine appeared on newsstands, the American Medical Association and the American Hospital Association jointly sent the following telegram to *Woman's Home Companion* Editor William A. H. Birnie and Crowell-Collier Board Chairman Thomas H. Beck:

"We wish to protest strongly the tone of 'Trouble in Our Hospitals' by Albert Deutsch in the current issue of *Woman's Home Companion.*

"While it is true there are some areas of disagreement betw physicians and hospitals—just as there are in all human r tionships—the author of this article has magnified these di ences of opinion out of all proportion to the truth. His st ment that 'The A. M. A. and the hospitals, which should marching hand in hand toward better services for the sick, locked in combat,' is nothing short of sensationalism.

"The doctors and hospitals have always cooperated in eff to deliver the best possible medical care and will continue t so. Any differences are being ironed out peaceably around conference table."

INFORMATION ON BLOOD BANKS

Inquiries regarding different types of blood banks are ceived at headquarters of the American Medical Associa from physicians and leaders of community organizations are considering plans for the development of a local blood b The Bureau of Medical Economic Research has published B tin 82, "Starting and Operating a Blood Bank," for the C mittee on Blood Banks of the American Medical Associa Blood banks are classified into seven principal types: the l hospital blood bank; the small hospital blood bank; the uni sity hospital blood bank; the Red Cross regional blood cer the Red Cross permissive blood program; the nonhospital bl bank sponsored by a medical society, and the nonhospital bl bank sponsored by a lay organization. One blood bank, re sentative of each type, is described in each of the seven arti which comprise this brochure. Well qualified officials of of these blood banks, located in different sections of the co try, present the history and describe the problems encount and the operations of their blood banks. The factual statem and the opinions expressed by each author are his own. Committee on Blood Banks of the American Medical Ass ation does not recommend any one type of blood bank. though certain of the technical operations of these blood ba are reasonably uniform, the type of organization varies con erably and reflects the traditional American method of find different solutions to a common problem. This brochure is dence of the genius of American communities for solving th own problems in their own ways. A copy of Bulletin 82 may obtained from the Bureau of Medical Economic Resear American Medical Association, 535 North Dearborn Stre Chicago 10.

MEETING OF COMMITTEE ON *AMENDMENTS TO CONSTITUTION*

The Committee on Amendments to the Constitution and Laws will meet in Chicago at the Headquarters office, 9 a. m., Saturday, May 19, 1951. Anyone desiring to submit m terial relative to changes should mail it either to Dr. Jose D. McCarthy, 1036 Medical Arts bldg., Omaha, Neb., or Dr. George F. Lull, 535 North Dearborn st., Chicago 10.

FEDERAL LEGISLATION

Physically Handicapped

Three bills have been introduced in the House of Represent tives, making a total of 11 identical bills that would establi the Federal Agency for the Handicapped. These bills were brie described in THE JOURNAL of April 28, 1951. These latest bi were introduced by Representative Tolefson of Washingto H. R. 3805; by Representative Wolverton of New Jersey, H. 3809, and by Representative Mitchell of Washington, H. R. 38

The summary of federal legislation was prepared by the Washingt Office of the American Medical Association and the summary of sta legislation by the Bureau of Legal Medicine and Legislation.

ATE LEGISLATION

rizona

Bill Enacted.—H. 83 has become Chapter 144 of the Laws of 1951. It ovides for the creation of an **anatomy board** for the purpose of distribut- certain dead human bodies to qualified institutions and persons for the omotion and furtherance of the science and art of medicine and ntistry.

alifornia

Bills Enacted.—A. 1036 has become Chapter 94 of the Laws of 1951. It nends the Health and Safety Code relating to state aid for **local health lministrations**. A. 1210 has become Chapter 105 of the Laws of 1951. amends the Business and Professions Code relating to qualifications for e practice of **medicine** by providing that the provisions applicable to pplications by United States commissioned medical officers shall also be pplicable to applicants who were in the armed forces of the United States uring the period Dec. 7, 1941-Dec. 31, 1946, and who were bona fide sidents of California before entering medical school. A. 1214 has become hapter 106 of the Laws of 1951. It amends the Business and Professions ode relating to **reciprocity applicants** by providing that the applicant ust have had a license issued in some other state at least one year prior the date of application for a California license. A. 2015 has become hapter 124 of the Laws of 1951. It amends the Business and Professions ode relating to the **practice of nursing** by authorizing the issuance of mporary permits under certain circumstances.

onnecticut

Bill Enacted.—S. 243 has become Public Act No. 3 of the Acts of 1951. authorizes the board of trustees of the University of Connecticut to fer instruction in **physical therapy** as a part of the university program d to grant suitable degrees therein.

lorida

Bills Introduced.—S. 254, proposes the establishment and operation of a tate hospital for **alcoholism**. S. 326, proposes that whenever the **dead ody of a human being** shall remain unclaimed by any relative of the de-eased for a period of 10 days after death, the board of county commis-ioners shall have authority and power to give such body for any educa-ional or research purpose to any medical school, dental school, school f nursing, or other college or university, whether within or without the tate of Florida. S. 384, proposes the enactment of a licensing law for **aternity homes**, day nurseries, nursing homes, and other institutions.

Maine

Bill Enacted.—S. 418, was approved April 16, 1951. It authorizes the epartment of Health, for the purpose of aiding in national defense in ase of war or emergency, to procure and distribute within the state **anti-oxins, serums, vaccines, viruses**, and analogous products applicable to the revention or cure of disease of man.

Michigan

Bills *Introduced*.—H. 463, proposes that the services and facilities of all **state laboratories** shall be available for all licensed members of the healing professions. H. 479, proposes, among other things, that persons taking the examination for a **license to practice medicine** must pass with a score of at least 75% in the subjects of anatomy, physiology, bacteriology, pathology, hygiene, chemistry, and public health. H. 481, proposes, among other things, that applicants taking an examination for the **license to practice osteopathy** must pass such examination with a score of at least 75% in the subjects of anatomy, physiology, bacteriology, pathology, hygiene, chemistry, and public health. H. 514, proposes the creation of a **board of registration in naturopathy** and defines naturopathy as that philosophy and practice of the healing art that embodies a complete physianthropy, diagnosis, and for the care of patients and for therapeutic purposes employs nature's agencies, forces, processes, and products, excepting major surgery, and x-ray and radium for treatment purposes.

Bill Enacted.—SCR 34, was adopted April 18, 1951. It is a direction to the Michigan Tuberculosis Sanatorium commission to study the needs for alteration and construction of existing and new facilities for the treatment of persons suffering from **tuberculosis**.

Minnesota

Bills Enacted.—H. 312 has become Chapter 710 of the Laws of 1951. It authorizes the State Board of Education to award **nursing scholarships**, under certain circumstances, to residents of the state. SCR 20, was adopted April 18, 1951. It provides for the creation of an Interim commission to make a study of the Minnesota Youth Conservation and **Mental Health** programs in the state. S. 601 has become Chapter 462 of the Laws of 1951. It provides for the creation of a commission to make a survey of the manner in which responsibility for the treatment and control of tuberculosis is now shared as well as a survey of the facilities for the diagnosis, treatment, and control of tuberculosis in the state. S. 1503 has become Chapter 618 of the Laws of 1951. It defines the term "**vendor of medical care**" as any person furnishing, within the scope of his respective license, any or all of the following goods or services: medical, surgical, hospital, optical, dental, nursing services, drugs and medical supplies, appliances, laboratory, diagnostic and therapeutic services, nursing home and convalescent care, and such other medical services or supplies provided or prescribed by persons authorized by state law to give such services and supplies. S. 1516 has become Chapter 708 of the Laws of 1951. It provides for the creation of a commission to make a study and investigation of the laws relating to **workmen's compensation** and to prepare suggested changes in such laws.

North Carolina

Bills Enacted.—H. 366 was ratified April 14, 1951. It makes it unlawful for any employer to require any employee or applicant for employment to pay the cost of a **medical examination** as a condition of employment. H. 387 was ratified April 14, 1951. It makes it unlawful for any person to sell **bay rum** in the state, except when such sale is made to a pharmacy or when it is made pursuant to a prescription of a duly licensed physician. H. 892, was ratified April 14, 1951. It permits charitable nonprofit corporations operating **charitable hospitals** under rules, regulations, and procedures as adopted by the budget commission, to purchase hospital supplies and equipment under contracts negotiated and entered into by the division of purchase and contract for the purchase of hospital supplies and equipment for state sanatoriums, hospitals, and other medical institutions operated by the state or agencies of the state. H. 913, was ratified April 14, 1951. It provides for the creation of a state **examining committee of physical therapists** and defines physical therapy as the treatment of any bodily or mental conditions of any person by the use of the physical, chemical, and other properties of heat, light, water, electricity, massage, and therapeutic exercise, which includes posture and rehabilitation procedures. The use of roentgen rays and radium for diagnostic and therapeutic purposes, and the use of electricity for surgical purposes, including cauterization, are not authorized under the term "physical therapy." H. 1134, was ratified April 14, 1951. It provides for the expenditure of federal grants to the North Carolina Medical Care commission for the construction of a unit on the campus of the University of North Carolina to be devoted to the treatment of **tuberculosis**.

Oklahoma

Bill Introduced.—H. 536, proposes the enactment of an Oklahoma Food, Drug, and Cosmetic act. Among other things this proposal would provide that a drug shall be deemed to be misbranded if it is a drug sold at retail and contains any quantity of **aminopyrine, barbituric acid, cinchophen, dinitrophenol, sulfanilamide**, or their derivatives, or any other drug found by the commissioner to be dangerous to health, unless it is sold on a written prescription signed by a member of the medical, dental or veterinary profession who is licensed by law to administer such drug, and its label bears the name and place of business of the seller, the serial number and date of prescription and the name of such member of the medical, dental, or veterinary profession.

Oregon

Bill Enacted.—H. 46, was approved April 23, 1951. It makes it unlawful for any vocational, professional, or trade school chartered or licensed in the state to **refuse admission to or to discriminate in admission** against or to discriminate in giving instruction to any person otherwise qualified on the ground of such person's race, color, religion, or national origin.

Pennsylvania

Bills Introduced.—H. 354, proposes the establishment of a **public laboratory** for the purpose of rendering assistance to coroners in their investigation of cases where death is sudden or violent and is of a suspicious nature and character and to ascertain whether death was due to other than natural causes. S. 457, proposes to bring within the coverage of the Occupational Disease act **tuberculosis** acquired by a nurse where the occupation involves exposure to such disease. S. 467, proposes that any person engaged in the practice of dentistry shall require every patient having one or more teeth to be extracted to first ascertain from such patient whether or not he or she is suffering from any **heart ailment** or if under the care of a duly licensed physician for any such ailment. If the answer is in the affirmative the dentist would be required to request the patient to obtain a certificate from his physician to the effect that the patient may have such tooth or teeth extracted. S. 524, proposes to authorize the inauguration of accelerated courses of training for **student nurses** in certain emergency areas.

South Carolina

Bill Introduced.—H. 1407, proposes the erection and maintenance of a state **cancer nursing home**.

Washington

Bill Enacted.—S. 288 has become Chapter 168 of the Laws of 1951. It provides regulations for the licensing of **maternity homes**.

MEDICAL NEWS

CALIFORNIA

Personal.—Dr. Paul H. Harmon, Oakland, has accepted an invitation for a three months' lectureship and visiting staff position at the Hospital dos Servidores do Estado, Rio de Janeiro. He assumed this position May 1.

Auxiliary Aids Children's Hospital.—The Woman's Auxiliary of the Los Angeles County Medical Association recently presented a check for $1,000 to the Los Angeles unit of the Shriners Hospitals for Crippled Children and a similar check to the Los Angeles Orphanage for its building fund. Mrs. E. Vincent Askey, Los Angeles, auxiliary president, made the presentation.

CONNECTICUT

Thorne Memorial Collection.—A Lewis Thorne Memorial Collection has been established at Timothy Dwight College, Yale University, New Haven, by fellows of the college. This collection will consist chiefly of medical, biographical and other titles for the attention of the college undergraduate interested in biology and medicine. In addition to the acceptance of funds for the project, a list of books that would be acceptable from individual donors has been prepared. Dr. Thorne, who was a fellow of the college, had a deep interest in the college undergraduate who contemplated a career in medical fields. For further information write Dr. Dudley P. Miller at the college.

DISTRICT OF COLUMBIA

Chemical Society Prize.—The 1950 Hillebrand Prize of the American Chemical Society's Washington Section was presented to three U. S. Department of Agriculture chemists at a dinner meeting March 8 in Washington. The winners are Henry Stevens, Ph.D., E. Jack Coulson, Ph.D., and Joseph R. Spies, Ph.D. A major accomplishment of the group has been the demonstration, through research carried on for several years, that cottonseed oil in food products does not cause allergies. Although an exceedingly potent allergen has been found in cottonseed, the federal chemists have established that this substance remains in the seed after the oil has been removed, so that foods containing or derived from cottonseed oil are free from the allergen. The prize, a cash award, was established in 1925 in honor of William Francis Hillebrand, chief chemist of the National Bureau of Standards from 1908 to 1925. It is conferred annually on a member (or members) of the Washington section in recognition of a notable contribution to chemistry during the three preceding years.

ILLINOIS

Annual Meeting on Mental Hygiene.—The Illinois Society for Mental Hygiene will meet at 1 p. m. May 14 at the Standard Club in Chicago. The findings of the Commission to Study State Government will be discussed by the following: Dr. John P. Spiegel, chief, psychiatric clinic, Michael Reese Hospital, Chicago, and member of the board of directors of the society, moderator; Bernice T. Vander Vries, member of the state legislature and member of the society's board of directors; Noble Lee, member of the Illinois legislature, dean of the John Marshall Law School and member of the Commission to Study State Government, and Dr. James M. Cunningham, director, Detroit Children's Center, and consultant, U. S. Public Health Service. The Schaefer Commission report as it relates to mental health services will be discussed at 2 p. m. Dr. Rudolph G. Novick, medical director of the society, says that this meeting will be important in that it will highlight the question of a separate department of mental health as opposed to mental health services being lodged in the Department of Public Welfare. Civic and professional organizations are urged
their memberships and participate in discussion. Inqui
be directed to Maryan H. Brugger, education director,
Society for Mental Hygiene, 123 West Madison street,

Chicago

Society News.—The Chicago Society of Physical Medi
Rehabilitation will hear Dr. Frank H. Krusen, Rocheste
May 23 at 8 p. m. in room 106 of the University o
College of Medicine. Dr. Krusen, professor of physic
cine and head of the section on physical medicine
habilitation at the Mayo clinic, will speak on "Ultras
Physical Medicine." Physicians and other professional p
and their guests are welcome.

Dr. Stevenson Appointed Cancer Study Coordinat
George Stevenson, instructor in Northwestern Universit
cal School, has been appointed coordinator of the scho
cer teaching program. He previously has served as
director of the program. He succeeds Dr. William B. W
chairman of the Northwestern department of patholo
program was established through a U. S. Public Heal
of $25,000 in November 1949 to introduce new cancer
findings into medical studies. The grant was augment
an additional $25,000 gift in November 1950.

Summer Diabetic Camp.—The Chicago Diabetes Ass
has acquired the use of part of the quarters of Holiday
summer camp at Lake Geneva in southern Wisconsin, f
weeks, June 25-July 16. Eighty children will be accom
there, in comparison to 48 last year. The campers ran
8 to 14 years of age. Parents pay according to their a
do so. To meet the cost of those who cannot afford
the association receives contributions. Dr. Alva L. Ne
Winnetka, Ill., is camp committee chairman for the
tion, which has its headquarters at 110 South Dearborn
Chicago 3.

Seminars on Rorschach Test.—The department of psyc
University of Chicago, announces two workshop semin
the Rorschach test to be held June 4 to 8 inclusive and J
to 15 inclusive. The seminars will be conducted by S. J.
Ph.D. Basic processes in the test will form the subject of
tion of the first workshop. Technique and controls in
istering will be demonstrated, all scorings sampled, and t
processing of a test record will be illustrated. This semin
therefore deal with all aspects of structuring the Rorscha
associations up to the point of interpretation. Progressiv
ditions in mental disease, as projected in the test, will
the second week's workshop. The clinical pictures to
emplified are personality problems, benign and maligna
early childhood; treatable conflicts and incipient schizop
in adolescence; disorder, milder and acute, in earlier ma
and personality courses in later maturity. The instructio
be at the level of advanced clinical interpretation. Th
workshop in basic processes may be attended by students
ready for the interne level. Admission to the second wor
is limited to psychologists and psychiatrists in clinical pos
or practice. Each workshop will meet in the university fo
two-hour sessions each day. For information regarding a
sion, fees or university credit when desired address Dr.
J. Thomas, Acting Chairman, Department of Psychology,
versity of Chicago, Chicago 37.

INDIANA

Dr. Sensenich Receives Auerbach Award.—Dr. Roscoe L.
senich of South Bend, former President of the American
cal Association, was presented the Auerbach Memorial A
at the annual meeting of the Indiana Tuberculosis Associa
The award, given for the first time this year, memorialize
late Murray A. Auerbach, executive secretary of the ass
tion 29 years. Dr. Harold D. Caylor of Bluffton was el

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

president. Dr. Horace Wanninger of Richmond was elected president of the Indiana Trudeau Society, which met at the ame time.

Annual Tumor Seminar.—The third annual tumor seminar of he Indiana Association of Pathologists in conjunction with the Veterans Administration hospital, Fort Benjamin Harrison, is being held at the hospital May 27 from 9 a. m. to 4:30 p. m. The eminar is being conducted by Dr. R. Philip Custer, director of aboratories, Presbyterian Hospital, Philadelphia, on the subect of "Diseases of the Lymphoid System." A number of study sets have been prepared for distribution to members of the profession and may be obtained from Dr. Lall G. Montgomery, Ball Memorial Hospital, Muncie. Luncheon is by reservation, which may be placed with Dr. Marvin N. Solomon, VA hospital, Fort Benjamin Harrison. Brig. Gen. Elbert DeCoursey, U. S. Army Medical Corps, director of the Armed Forces Institute of Pathology, will address the meeting on "Atomic Bomb Casualties."

KENTUCKY

The John W. Fish Lecture.—Dr. Andrew C. Ivy, Chicago, vice president of the University of Illinois in charge of Chicago professional colleges and chairman of the department of clinical science of the school of medicine, recently delivered the first ecture in a series honoring the memory of Dr. John W. Fish, he only Jefferson county physician killed in action in World War II. Dr. Ivy spoke in the amphitheater of the Louisville General Hospital on "Pancreatitis." The John W. Fish Memorial Lectureship was created by the University of Louisville chapter of the medical fraternity, Alpha Kappa Kappa.

Cancer Society Awards Presented.—The 1951 award of the American Cancer Society was given to Victor A. Sholis, vice president and director of radio station WHAS, Louisville, April 13, for being the layman who had made the most outstanding contribution to the cancer control program in America. Dr. Elmer L. Henderson, Louisville, President of the American Medical Association, presented the award in the form of a scroll during surprise ceremonies at the Pendennis Club. He commended Mr. Sholis for his preparation of a publicity campaign that attracted national attention to Kentucky's crusade against cancer. Dr. Guy Aud, president of the Kentucky division of the American Cancer Society, presented for the first time the 1951 Cancer Crusade Citation for the Kentucky division of the organization to Dr. J. Duffy Hancock, Louisville, chairman of the Kentucky board. The award lauded the Kentucky division for its mobile cancer unit that serves rural and mountainous areas of the state. Dr. Aud stated that the unit during its four and a half years of operation had reached 3,921 rural Kentuckians at 82 clinics, resulting in the detection of 371 cases of cancer.

MARYLAND

Personal.—Dr. Robert V. Seliger, director of the Neuropsychiatric Institute of Baltimore, has been appointed medical consultant to the Canadian National Committee for Education on Alcoholism, Inc., of Montreal.

Fund to Benefit Rural Medicine.—The Woman's Auxiliary of the Baltimore City Medical Society selected March 30 as "Doctor's Day" in honor of Dr. Crawford Long, who successfully used the first anesthetic on March 30, 1842. It celebrated the day by creating a medical scholarship fund through which it is hoped that rural medicine will be benefited. Scholarships will be available to children of deceased physicians or the children of physicians who are willing to practice in rural areas.

MICHIGAN

Survey of Endemic Goiter in Four Counties.—Plans are being completed for examining 70,000 school children in four Michigan counties this spring to determine the prevalence of simple goiter in Michigan school children. Examinations will be made in Macomb, Midland, Houghton and Wexford counties by physicians employed by the Michigan Department of Health. These are the counties first surveyed in 1924 when it was found that about half of the children examined showed goiter. Examinations of school children from kindergarten through high school will be made in cooperation with local schools, local health departments and practicing physicians. Planning and working in cooperation with the state health department are the iodized salt committee of the Michigan State Medical Society and the Nutrition Advisory Committee to the State Health Commissioner. As a result of the 1924 survey salt manufacturers put "iodized" salt on the market in Michigan. Michigan lies in the "goiter belt," that section of the country with the lowest iodide content in the soil and water, which stretches across the northern United States.

MISSOURI

Cancer Research Endowment.—A trust valued at approximately $33,000, to be known as the Ellen McBride Cancer Research Endowment, has been given anonymously to the St. Louis University School of Medicine in honor of the late Reverend Mother Reid.

Annual Thompson Lecture.—The second annual Dr. F. G. Thompson Sr. lectureship on "Surgery of the Esophagus" was given by Dr. John H. Garlock, professor of clinical surgery, Columbia University College of Physicians and Surgeons, and chief of surgery, Mount Sinai Hospital, New York, May 10 at 8: 00 p. m. in the Thompson, Brumm & Knepper Clinic, St. Joseph.

NEW YORK

Bulletin on Family Life.—The first issue of a new bulletin, *Family Life*, produced by the New York Tuberculosis and Health Association, is being sent to professional men and women in New York. It is produced to help teachers, social workers, ministers, health educators and interested lay people to keep up with progress in this important field. Information on the bulletin may be obtained from Jacob A. Goldberg, Ph.D., director, Social Hygiene Division, New York Tuberculosis and Health Association, 386 Fourth Avenue, New York 16. The bulletin will appear nine times a year.

State University Research Foundation.—President Alvin C. Eurich of State University of New York announced in April the creation of The Research Foundation of State University of New York, a private educational corporation associated with State University in carrying forward a greatly expanded research program within the university. Under the terms of the foundation charter, which was approved by the board of regents at their meeting of February 16, the foundation may: "(a) Assist in developing and increasing the facilities of State University of New York to provide more extensive educational opportunities for and service to its students, faculty, staff and alumni, and to the people of the State of New York by making and encouraging gifts, grants, contributions and donations of real and personal property to or for the benefit of State University of New York; (b) receive, hold and administer gifts or grants and act without profit as trustees of educational or charitable trusts of benefit to and in keeping with the educational purposes and objects of State University of New York, and, (c) finance the conduct of studies and research in any and all fields of the arts and sciences of benefit to and in keeping with the educational purposes and objects of State University of New York." Policies and actions will be carried on in the closest conjunction with those of state university itself. The president of the university is ex-officio chairman of the nine member board of directors of the foundation, who are to be selected by the university board of trustees. The foundation is required to restrict its activities to those areas approved by the university.

New York City

Medal Awarded to Dr. Ochoa.—The Neuberg Medal Award of 1951 for "outstanding achievement in biochemistry" was presented in February to Dr. Severo Ochoa, professor and chairman of the department of pharmacology, New York University College of Medicine. The award is given annually by the American Society of European Chemists and Pharmacists. Dr. Ochoa has been the head of the Medical Center's department of pharmacology since 1946, having first been appointed to the medical faculty as a research associate in the department of medicine in 1942.

Academy Exhibits.—An exhibit in the library of the New York Academy of Medicine lasting from April through September depicts medicine on the battlefield before 1900. The American Revolution is represented by a surgical kit and lodestone carried by a New York surgeon of the period, the lodestone for the purpose of assistance in removing shot. Care and transportation of the wounded in the Napoleonic wars may be seen in copies of the works of Larrey, Napoleon's surgeon-in-chief. The artist, Daumier, provides a vignette in Fabre's *Némésis Médicale Illustrée,* Paris, 1840. The Civil War is depicted in a number of contemporary sketches published in magazines of that time.

From May to September the library will have its annual showing of books published by New York City physicians in 1950.

University Appointment.—Dr. Carl A. Neuberg, New York, has been appointed associate in the department of biochemistry with the rank of professor at New York Medical College, Flower-Fifth Avenue Hospitals. Dr. Neuberg came to the United States from Germany in 1941 and has been engaged in research at New York University and at Brooklyn Polytechnic Institute. For the discovery of the enzyme carboxylase, he received the Emil Fischer Medal of the Society of German Chemists. For his discoveries concerning the diversified splitting of the sugar molecule by yeast and microorganisms and for his discoveries of the enzymes sulfatase, metaphosphatase, pyrophosphatase and triphosphatase, he received medals from the Société Chimique de France, Societe de Biochimie in Paris, and the medical and chemical societies of Sweden. He holds honorary degrees from universities in Germany, Russia, Italy and England.

OKLAHOMA

Meeting on Rheumatism.—The Oklahoma Rheumatism Society will meet at the Mayo Hotel in Tulsa May 20 under the presidency of Dr. Summer Y. Andelman, Tulsa. In the afternoon the guest speaker, Dr. Otto Stein Brocher, associate clinical professor of medicine, New York University Postgraduate Medical School, will discuss the "Shoulder-Hand Syndrome." He will also preside at a roundtable discussion on "Rheumatoid Arthritis."

TENNESSEE

Personal.—Dr. Robert L. Sanders, Memphis surgeon, was recently awarded the gold medal of the American Cancer Society "in recognition of distinguished contribution to the control of cancer." He is the first Memphian to receive the award, which is given annually in each state for recognition of meritorious services.

Chair of Experimental Medicine.—A "Joe and Morris Werthan Chair of Experimental Medicine" will be established in the Vanderbilt University School of Medicine, Nashville, as a result of a $100,000 gift by the local Werthan Foundation. The school was given a free hand in administering the fund, except for the stipulation that the man holding the chair must devote his full time to teaching and research in medicine. The notification of the gift was signed by Joe, Bernard, Howard and Albert Werthan, all trustees of the foundation. The late Morris Werthan was president of Werthan Bag Corporation at the time of his death.

TEXAS

Marchman Award.—Dr. Curtice Rosser, Dallas, received the annual Marchman award March 27 for "outstanding scientific contributions and distinguished service to medicine." The award is presented annually at the spring clinical conference of the Dallas Southern Clinical Society to the outstanding Dallas physician of the year.

Course in Radiological Physics.—The Department of Physics of the M. D. Anderson Hospital for Cancer Research will offer a special course in Radiological Physics June 18-23 in the Auditorium of the M. D. Anderson Hospital, Houston. The course will consist of some 15 lectures and is addressed to physics graduates, biologists, isotope workers and others interested in the applications of radiation physics to medicine and biology. Dr. Leonard G. Grimmett, professor of biophysics, University of Texas Postgraduate School of Medicine, will be the instructor.

Expand Neuropsychiatric Service.—An improved and expanded neuropsychiatric service for the patients of Jefferson Davis Hospital at the Texas Medical Center, Houston, has been made possible by a gift from members of a family who desire to remain anonymous. A grant of $40,000 has been assigned to Baylor University College of Medicine to organize an expanded service and support its first year's operation under the direction of the chairman of the department of neuropsychiatry, who is also chairman of the division of neuropsychiatry at Jefferson Davis Hospital.

WASHINGTON

Auxiliary Radio Programs.—The woman's auxiliary of the King County Medical Society has sponsored a series of transcribed radio talks intended to influence public opinion to support voluntary plans and reject compulsory health insurance schemes. The five minute broadcasts were scheduled March 5 through March 22. The auxiliary financed the programs through funds raised at the annual dinner dance last May and a contribution from the King County Medical Society.

Dr. Clarence Smith Honored.—Congratulatory letters and telegrams from all over the country were received by Dr. Clarence A. Smith, Seattle, on the occasion of his ninety-first birthday. Dr. Smith has been associated with *Northwest Medicine* for over 50 years. He still observes regular office hours and does a major part of the manuscript preparation and editorial writing for the journal. He retired from active medical practice in 19 but continued to edit the official publication of the medical societies of Washington, Oregon, Idaho and Alaska.

WEST VIRGINIA

Tax Proposal Defeated.—The proposal for a tax on members of professions, offered before the Morgantown city council, was defeated April 3 by a vote of 7 to 3. Many interested groups, including physicians, nurses and lawyers, had previously protested the levying of the tax by the council.

Medical Emergency Service.—At the Kanawha Medical Society meeting March 12 it was reported that the 24 hour emergency medical service established by the society in May 1950 has received nearly 1,300 calls since its inception. The call system was set up in connection with the local physicians and nurses bureau and listed in the telephone directory under "Emergency Illness." The system is designed to obtain the services of a physician in the time of need for any individual in the community who is unable to locate his family physician or does not have a family physician.

GENERAL

American Ophthalmological Society.—The annual meeting of this society will be held at the Greenbrier in White Sulphur Springs, W. Va., June 7 to 9 under the presidency of Dr. John H. Dunnington, New York. Twenty-two papers will be presented at the scientific sessions.

Society for Investigative Dermatology.—This society will hold its annual meeting at the Ritz-Carlton Hotel, Atlantic City, N. J., June 7 to 9 under the presidency of Dr. Marion B. Sulzberger, New York. A series of 50 scientific papers will be read at morning and afternoon sessions. The cocktail party and banquet will be held at 7 p. m. Thursday.

International Proctologists Meeting.—The third Annual Convention of the International Academy of Proctology will be held at the Mayflower in Atlantic City, N. J., June 7 and 8. The scientific session will be open to members of the medical ofession without charge. The annual banquet will take place hursday evening. For further information address Dr. Alfred Cantor, Secretary, International Academy of Proctology, 819 Broadway, New York 23.

uberculosis Association Secretary Retires.—Frederick D. lopkins, for the last 30 years executive secretary of the National Tuberculosis Association, retired in April. He is sueded by James G. Stone, director of program development for e last eight years. Mr. Stone formerly was the executive sectary to the Los Angeles Tuberculosis and Health Association.

merican Geriatrics Society.—This group will hold its eighth nnual meeting at the Hotel Brighton in Atlantic City, N. J., une 7 to 9 under the presidency of Dr. Harold W. Lovell, New York. In addition to a number of papers on various asects of geriatrics, there will be a panel discussion Friday afteroon on endocrinology with Dr. Willard O. Thompson, Chicago, presiding. On Saturday afternoon Dr. Edward L. Bortz of Philadelphia will lead a panel discussion on nutrition. Dr. Elliot P. Joslin, Boston, will be the guest of honor at the nnual dinner Friday evening.

ociety for the Study of Sterility.—This group will hold its anual meeting at the Ritz Carlton Hotel in Atlantic City, N. J., une 9 and 10. Subjects to be discussed at the four half-day sesons are ovulation and abortion salvage, male infertility, basic iences and veterinary problems relating to infertility and disses of the falopian tubes and cervix. There will be informal ound table discussions and conferences on fertility and sterility t the Saturday evening meeting. The annual banquet will be held unday evening at 7:00. The speakers will be Drs. John Rock, oston; Oren Moore, Charlotte, N. C., and Benjaman B. Weinein, New Orleans.

merican Proctologic Society Meeting.—This society will hold ts annual meeting in Atlantic City, N. J., June 6 to 9 under the residency of Dr. Hoyt R. Allen, Little Rock, Ark. Guest peakers include:

Robert E. Grass, Boston, Surgical Treatment of Anomalies of the Anus and Rectum.
Wallace E. Herrell, Rochester, Minn., A Consideration of the New Antibiotics.
Frank C. Yeomans, New York, The Joseph Mathews Biennial Oration: New Horizons in Proctology.

he program also includes a symposium on diagnosis and eatment of diverticulitis. Exhibits and scientific motion pictures ill be shown. The annual banquet will be held Saturday at p. m.

oundation Plans Broadcasts.—The Health Information Foundation, in cooperation with the National Broadcasting Company, has scheduled a series of five weekly documentary broadasts under the title "All Their Powers" focused on commuity action to improve health. The series will be carried weekly y at least 100 stations. The network is releasing the programs t 5:30 p. m., EST, on Saturdays beginning May 12. State and ounty medical societies may approach their local NBC station vith a request that "All Their Powers" be carried. President William H. P. Blandy of the Health Information Foundation, 420 Lexington ave., New York, explained that each station is an utonomous unit which naturally enough wishes to devote its public service time to programs of greatest interest to its local onstituency, and therefore requests from local groups carry a ertain amount of influence.

National Traffic Contest Winners.—Pennsylvania and Wichita, Kan., were named grand award winners in the 1950 National Traffic Safety Contest conducted by the National Safety Counil. All 48 states and 684 cities participated in the contest, which overed the calendar year of 1950. States that won first place n their divisions were: Minnesota among Midwestern states; Washington among Western states; Arkansas among Southern tates; Massachusetts among Eastern states, and Pennsylvania n addition to winning the grand award won first place among he eight largest states, which were grouped separately due to heir peculiar traffic problems growing out of large population nd mileage.

Cities that won first place in their population groups were: Los Angeles, among cities of more than 1,000,000 population; San Francisco, in the 750,000 to 1,000,000 group; Minneapolis in the 500,000 to 750,000 group; Denver in the 350,000 to 500,000 group; Syracuse, N. Y., in the 200,000 to 350,000 group; Wichita, Kan., in the 100,000 to 200,000 group (in addition to winning the grand award); San Jose, Calif., in the 50,000 to 100,000 group; Dubuque, Iowa, in the 25,000 to 50,000 group, and Stillwater, Okla., in the 10,000 to 25,000 group. Government cities were considered in a special category. Richland, Wash., won first place; Oak Ridge, Tenn., was voted an achievement award for the excellence of its accident records system. Other special awards included an honor roll of 142 cities of more than 10,000 population that completed 1950 without a traffic death. The largest of these was Brookline, Mass. (57,000), and second largest was Berwyn, Ill. (51,200).

International Angiology Meeting.—The International Society of Angiology will hold its first meeting June 9 at the Claridge Hotel in Atlantic City, N. J. The program includes the following papers:

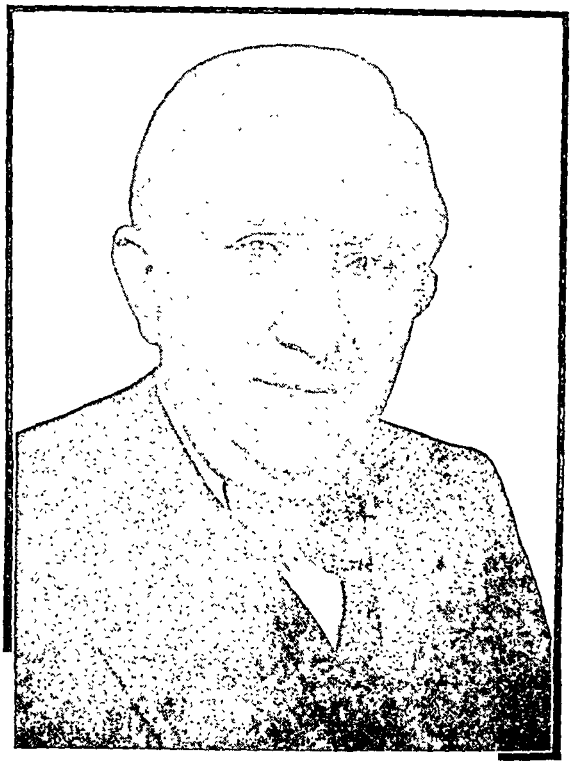
René Leriche, Paris, Rational Principles in the Treatment of Spontaneous Arterial Occlusions.
Fernando Martorell, Barcelona, Spain, Treatment of Chronic Edema of the Leg.
Geza De Takats, Chicago, Phenomenon of Stress in Relation to Hypertension.
Harris B. Schumacker Jr., Indianapolis, Present Status of Treatment of Frostbite.
Leo Loewe, New York, Prevention and Treatment of Intravascular Clotting.
Robert R. Linton, Boston, Intrasaccular Wiring of Thoracic and Abdominal Aneurysms.
Frederick B. Wagner Jr., Philadelphia, Present Status of Arteriography of Peripheral Vessels.
Gerald H. Pratt, New York, Recent Advances in Surgical Treatment of Arterial Diseases.
Henry Haimovici, New York, Clinical Applications of Odrenergic Blockade.
Norman E. Freeman, San Francisco, Vein Inlay Graft in the Surgical Treatment of Abdominal Aneurysms.

Robert H. Goetz, Capetown, South Africa, and Alfonso R. Albanese, Buenos Aires, also will address the group. There will be a business meeting after the scientific session. Correspondence regarding the meeting should be addressed to Dr. Henry Haimovici, Secretary, 105 East 90th Street, New York 28.

American Heart Association Report.—The annual report of the American Heart Association lists a record of the association's scientific, public health, public information and education, financing and administrative programs for the year 1950. The national office allocates half of its funds to research, entirely apart from grants made locally by the association's affiliates. During the fiscal year ended June 30, 1950 the association and its affiliates allocated approximately $900,000 for research studies. Of this amount, $416,385.83 was appropriated by the national office and includes $124,496.99 for four established investigators and 28 research fellowship awards to individuals and $291,888.84 for 49 grants-in-aid to institutions. These allocations represent an increase of 84 per cent over the previous year's total awarded by the national office. The association's professional program is carried on through its annual scientific session, its scientific programs and its two professional periodicals, *Circulation* and *Modern Concepts of Cardiovascular Disease.* Through its public health program the association translates scientific knowledge into community action. This is done by affiliated associations, which in 1950 grew from 38 on July 1, 1949 to 58 on Dec. 31, 1950 and now cover 40 states, the District of Columbia, Hawaii and Puerto Rico. Most affiliates are state-wide in scope and have about 125 chapters under their jurisdiction. The association held a national conference on cardiovascular diseases in January 1950, which was attended by 196 delegates from 32 states. In April it sponsored the first special training institute at Mitchell, Ind., for executive secretaries and other staff members of affiliated heart associations. During the 1950 fund raising campaign $4,104,484.82 was collected by the association and its affiliates as compared to $2,655,777 in 1949. Fund raising costs were decreased 4 per cent. Seventy-five per cent of the funds are retained locally by the affiliate association for research, education and community services.

DEATHS

Bloss, James Ramsdell ⊕ Huntington, W. Va., a member of the Board of Trustees of the American Medical Association from 1935 to 1945 and a member of the House of Delegates almost continuously from 1921 to 1935, died in a local hospital April 21, aged 69, of a duodenal ulcer with complications. Dr. Bloss was born in Ceredo, W. Va., Sept. 5, 1881. He received his M.D. degree from the University of Virginia Department of Medicine, Charlottesville, in 1905. After serving an internship at the Chesapeake and Ohio Hospital in Huntington, he was appointed assistant superintendent of the Huntington State Hospital, where he remained until 1913. A specialist certified by the American Board of Obstetrics and Gynecology, Dr. Bloss was from 1936 to 1947 secretary and in 1948-1949 president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons. He was a member of the West Virginia Obstetric and Gynecologic Society, serving as secretary-treasurer in 1936 and president in 1943. Dr. Bloss was president of the West Virginia State Medical Association in 1926, was for several years chairman of its maternal welfare committee and was past president and secretary of the Cabell County Medical Society. From 1932 to 1938 he was a member of the council of the Southern Medical Association, becoming chairman in 1935, vice chairman and chairman of the section of obstetrics in 1935 and 1936 respectively and vice president in 1940. He was a patron of the Smithsonian Institution and a founder and sustaining member of the U. S. Committee of the World Medical Association, a fellow of the American College of Surgeons, member of the American Psychiatric Association, Academy of International Medicine, Southern Association of Railway Surgeons, Chesapeake and Ohio Railway Surgeons, West Virginia Academy of Science, American Association for the Advancement of Science and the American Association of Railway Surgeons. He was obstetrician in charge at Chesapeake and Ohio Hospital and on the visiting staff of Memorial Hospital, member and in 1934 president of the attending staff and former lecturer on obstetrics for nurses at St. Mary's Hospital. He was formerly examiner for the Mental Hygiene Commission of Cabell county and during World War I medical examiner for the selective draft board. Dr. Bloss served as editor of the *West Viriginia Medical Journal* from 1916 to 1926, as assistant editor from 1926 to 1927 and editor from 1927 through 1937, when he was named editor emeritus.



James Ramsdell Bloss, M.D., 1881-1951

Rutherford, Henry Holcomb ⊕ Colonel, U. S. Army, retired, Washington, D. C.; born in Fort Smith, Ark., Feb. 17, 1873; University of Missouri School of Medicine, Columbia, 1898; at one time assistant professor of military science and tactics at the University of Minnesota Medical School, Minneapolis; served as an assistant surgeon with the Second Missouri Volunteer Infantry in the Spanish-American War; on June 29, 1901 was appointed to the Medical Corps of the U. S. Army; on duty at the Presidio of San Francisco at the time of the earthquake and fire in 1907; served on the Mexican Border in 1916 and thro World War I; in 1926 was assigned to the office of the surg 8th Corps Area at Fort Sam Houston, Texas, and from th went to the Philippines in 1930 as department surgeon; on return was assigned to duty in Washington in the Natio Guard Bureau; retired February 1937; fellow of the Ameri College of Surgeons; member of the Military Order of Carabao; died in Walter Reed Army Hospital January 17, a 77, of carcinoma of ascending colon with metastases to the l

Grove, William Edward ⊕ Milwaukee; born in Madison, Dec. 21, 1882; Johns Hopkins University School of Medi Baltimore, 1908; emeritus clinical professor of otolaryngo at Marquette University School of Medicine; specialist c fied by the American Boar Otolaryngology; since April 1 member of the Council on Ph cal Medicine and Rehabilita of the American Medical A ciation; member of the Amer Academy of Ophthalmology Otolaryngology and chairma the subcommittee on noise in dustry of its committee on servation of hearing, Amer Laryngological Associati American Laryngological, Rh logical and Otological Soc and the American Otological ciety, of which he had been president; fellow of the Amer College of Surgeons; otola gologist, Mount Sinai, Colum Milwaukee Children's and waukee County hospitals; k in an automobile accident Middlesboro, Ky., March aged 68.

Shanahan, William Thomas, gertsville, N. Y.; born in Sy cuse, May 14, 1878; Syrac University College of Medic 1898; member of the Ameri Medical Association; life mem of the American Psychiat Association; past president of Livingston County Medical ciety and in 1912 president the Seventh District Branch; p president of the National Soci for the Study of Epilepsy; served as lecturer on epilepsy Fordham, Syracuse and Buffalo medical schools; medical sup intendent for 32 of the 47 years he had been connected w Craig Colony; died January 26, aged 72, of arterioscler heart disease.

Vietor, Agnes Caecilia, Worcester, Mass.; Woman's Medical C lege of the New York Infirmary for Women and Children, N York, 1892; at one time on the faculty of her alma mater; fell of the American College of Surgeons and member of its board governors from 1926 to 1937; member and past president of New England Women's Medical Society; member of the N York Academy of Medicine, Medical Women's Internatio Association and the Gorgas Memorial Institute of Tropical a Preventive Medicine; editor of "Woman's Quest"; died Febru 2, aged 90, of arteriosclerosis.

Decker, Raymond Rudolph ⊕ Lewistown, Pa.; Medico-C rurgical College of Philadelphia, 1909; past president of Mifflin County Medical Society; served during World War and II; formerly affiliated with the Veterans Administration h

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⊕ Indicates Fellow of the American Medical Association.

ital in Butler; died in Lewistown Hospital recently, aged 66, f coronary occlusion.

De Kraker, James M., Grand Rapids, Mich.; College of Physiians and Surgeons of Chicago, 1894; served on the staff of utterworth Hospital, where he died March 4, aged 85, of iabetes mellitus and cardiovascular renal disease.

Donnelly, James Francis, Philadelphia; Medico-Chirurgical College of Philadelphia, 1896; formerly chief of the examining urgeons in the U. S. Pension Bureau; served on the staffs of the National Stomach Hospital, Medico-Chirurgical Hospital, St. Mary's Hospital and the Physicians and Surgeons Hospital, where he died February 17, aged 76, of pneumonia.

Edgcomb, John Harold ⊕ Ottawa, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; president of the high school board; served during World War I; killed February 12, aged 66, in an automobile accident.

Elliott-Graham, Alice Winifred, Corpus Christi, Texas; Medical College of Virginia, Richmond, 1935; member of the American Medical Association; affiliated with St. Elizabeth Hospital; died anuary 17, aged 43.

Ellis, John W., Kennesaw, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1900; member of the American Medical Association; died recently, aged 82, of cardiac occlusion.

Feigley, Harvey P. ⊕ Quakertown, Pa.; Jefferson Medical College of Philadelphia, 1911; also a graduate in pharmacy; past president of the Bucks County Medical Society; served as medial examiner for the Pennsylvania Railroad; affiliated with Grand View Hospital, Sellersville, and the Quakertown Community Hospital; died February 28, aged 67, of myocardial nfarction.

Ferguson, James Bruce, New York; Trinity Medical College, Toronto, Canada, 1893; specialist certified by the American Board of Otolaryngology; formerly on the faculty of the New York Post Graduate Medical School and Hospital; died February 28, aged 86.

Flagg, Charles Monroe, Boston; Harvard Medical School, Boston, 1915; died recently, aged 68, of cerebral thrombosis and diabetes mellitus.

Friedman, Louis Alexander ⊕ New York; University and Bellevue Hospital Medical College, New York, 1899; an Associate Fellow of the American Medical Association; past president of the Bronx County Medical Society; served as district health officer; died February 28, aged 73, of carcinoma.

Friedman, Simon Sydney ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1906; affiliated with Sydenham Hospital and Lenox Hill Hospital, where he died February 27, aged 66, of coronary thrombosis.

Grimm, Homer Willard ⊕ Coral Gables, Fla.; Jefferson Medical College of Philadelphia, 1916; member of the Connecticut State Medical Society; specialist certified by the American Board of Radiology; member of the Radiological Society of North America; formerly affiliated with St. Margaret Memorial and Columbia hospitals in Pittsburgh; died January 14, aged 59, of cerebral hemorrhage and hypertension.

Halstead, Addison T., Rushville, N. Y.; University of Buffalo School of Medicine, 1896; member of the American Medical Association; for many years health officer of the village of Rushville and town of Potter; served as county coroner; on the staff of the Frederick Ferris Thompson Hospital in Canandaigua; died in the Rochester (N. Y.) General Hospital February 21, aged 77, of general arteriosclerosis.

Hayward, John Dawson ⊕ St. Louis; Barnes Medical College, St. Louis, 1906; an Associate Fellow of the American Medical Association; past president of the St. Louis County Medical Society; died in Missouri Baptist Hospital March 3, aged 73, of cerebral hemorrhage.

Heath, George Arthur, Fairbury, Neb.; Illinois Medical College, Chicago, 1897; affiliated with Fairbury Clinic and Hospital; died January 26, aged 77, of myocardial degeneration.

Hornaday, Frank Adelbert ⊕ Washington, D. C.; George Washington University School of Medicine, Washington, 1910; formerly on the faculty of his alma mater; for many years consulting physician at University Hospital; died February 9, aged 71, of coronary thrombosis and hypertension.

Houston, Samuel Wilson, Wolcott, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1894; member of the American Medical Association; served as town health officer for Wolcott, Butler and Huron and village health officer for Red Creek; died in Edward J. Barber Hospital, Lyons, February 15, aged 77, of Hodgkin's disease.

Hoyer, George Henry Christian ⊕ Beaver Dam, Wis.; Rush Medical College, Chicago, 1922; on the staff of Lutheran Deaconess Hospital; died February 1, aged 60, of coronary disease.

Hull, Luther Nathaniel Jr., Albuquerque, N. M.; University of Texas School of Medicine, Galveston, 1943; died February 25, aged 31.

Hutchinson, Edward Buel, Patagonia, Ariz.; Rush Medical College, Chicago, 1891; died February 17, aged 83, of senility.

Iseman, Lawrence Lee ⊕ Chicago; Johns Hopkins University School of Medicine, Baltimore, 1906; member of the American Medical Association; fellow of the International College of Surgeons and the American College of Surgeons; on the staff of Chicago Memorial Hospital; died in Wesley Memorial Hospital February 1, aged 71, of arteriosclerotic aneurysm with retroperitoneal hemorrhage.

Melzer, Charles Sidney ⊕ Springfield, Ohio; University and Bellevue Hospital Medical College, New York, 1924; served during World War II; on the courtesy staffs of City Hospital and Mercy Hospital, where he died February 12, aged 49, of coronary occlusion.

Methvin, Samuel Robert ⊕ Sylvester, Ga.; Atlanta College of Physicians and Surgeons, 1908; died recently, aged 72, of hypertensive cardiovascular disease.

Miller, Samuel W. ⊕ Lancaster, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; fellow of the American College of Surgeons; served during World War I; at one time medical superintendent of the Lancaster County Hospital; consulting surgeon, Lancaster General Hospital; died February 11, aged 79, of coronary occlusion.

Milstead, Nathaniel Joseph, Jackson, Miss.; Louisville (Ky.) Medical College, 1886; member of the American Medical Association; died February 10, aged 89, of gangrene of the left leg and generalized arteriosclerosis.

Mitchell, Ralph Wendell ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1918; member of the Association for Research in Nervous and Mental Diseases; served as house physician for the Metropolitan Opera Company; visiting physician, second medical division, Goldwater Memorial Hospital; died in the Newport (R. I.) Hospital February 9, aged 58, of duodenal ulcer.

Moore, Walter Scott ⊕ Etowah, Tenn.; University of Louisville (Ky.) Medical Department, 1909; died in the Foree Hospital, Athens, February 17, aged 67, of cerebral thrombosis.

Morrow, William Boyd, Weirsdale, Fla.; Jefferson Medical College of Philadelphia, 1891; died in Munroe Memorial Hospital, Ocala, February 5, aged 86, of bronchopneumonia.

Motzenbecker, Peter Francis, Maplewood, N. J.; New York University Medical College, New York, 1896; served as professor of physiology and hygiene at St. Benedict's Preparatory School in Newark; member of the American Medical Association; died in St. Mary's Hospital, Orange, February 9, aged 77, of carcinoma of the prostate with metastases.

Oates, Theodore Kensell, Martinsburg, W. Va.; University of Maryland School of Medicine, Baltimore, 1896; fellow of the American College of Surgeons; past president of the West Virginia Hospital Association; for many years served as superintendent of City Hospital, where he died February 3, aged 81, of cerebral hemorrhage.

GOVERNMENT SERVICES

DEPARTMENT OF DEFENSE

Dr. Meiling Resigns.—Secretary of Defense George Marshall announced April 26 the resignation of Dr. Richard L. Meiling as chairman of the Armed Forces Medical Policy Council, effective June 30. A successor has not been named. In his letter of resignation Dr. Meiling stated that his two year leave of absence from the Ohio State University College of Medicine terminates on June 30, and that he felt he must return to his professional, clinical and academic responsibilities. Dr. Meiling has served in the Office of the Secretary of Defense since 1948, under Secretaries Forrestal, Johnson and Marshall. General Marshall said that he accepted Dr. Meiling's resignation with deep regret.

Dr. Meiling has served as chairman of the Armed Forces Medical Policy Council since its establishment on Jan. 2, 1951. An original member of the Armed Forces Medical Advisory Committee established by Secretary of Defense James Forrestal in November 1948, Dr. Meiling also served as director of the Office of Medical Services, Department of Defense, for 15 months. A brigadier general in the U. S. Air Force Reserve, he was on active duty from October 1940 until 1946, during which period he was graduated from the Air Force School of Aviation Medicine and the Army Command and General Staff School. He has served as a member of numerous councils of the U. S. Public Health Service, a member of the health advisory board of the American National Red Cross and as an advisor to the United States delegation to the World Health Assembly of the World Health Organization in Geneva, Switzerland, in 1950 and 1951.

AIR FORCE

Inspection Tour in Korea.—Maj. Gen. Harry G. Armstrong, Air Force surgeon general and Brig. Gen. Albert H. Schwichtenberg, chief, Civil and Military Inter-Relation Division, Office of the Secretary of Defense, have returned from an inspection of the Air Force medical facilities in the Far East. Other military personnel in the tour included directors and top level chiefs of the Office of the Surgeon General and representatives of the School of Aviation Medicine.

Civilian consultants making the trip were Dr. Cortez F. Enloe, Manhasset, L. I., N. Y., internal medicine; Dr. Elmer L. Henderson, Louisville, surgeon and President, American Medical Association; Dr. William P. Holbrook, Tucson, Ariz., internist and president, American Rheumatism Association; Dr. Russel V. Lee, Palo Alto, Calif., internal medicine; Dr. John M. Murray, Boston, psychiatrist, and Dr. Herbert B. Wright, Cleveland, urologist.

A headquarters press conference was called April 5 by General Armstrong. Dr. Holbrook said, "We visited dispensaries, hospitals, airstrips, talked to pilots of fighters and bombers; followed the medical chain of evacuation from the front on back through the chain, and talked to hundreds among the group who were then well and doing the fighting. At present the three services—Army, Navy, Air Force—are giving the best care that has ever been given to the troops, with less than half the doctors per thousand troop population used during the last war."

Dr. Henderson flew 80 miles over the enemy lines in Korea and rode an air evacuation plane carrying patients from Korea back to Japan. "Their morale," he said "was very high. A lieutenant remarked, "Five minutes after I was wounded I was back in the first-aid station where I was taken care of. My wounds were dressed, and within 50 minutes I was on a plane being evacuated by air to a hospital in Korea.' Air evacuation is the greatest thing that has come out of this Korean incident as concerns saving lives of soldiers."

Dr. Enloe said, "I ran into five soldier-patients at Travis Air Force Hospital in California on March 17. On March 7 they had been wounded prisoners of the Chinese. They were released by our advance on the seventh and within 10 days were in California."

Dr. Lee checked particularly on young military doctors "I think I found only one out of something over a hundred physicians who was dissatisfied with his particular assignment," he reported. "I thought we would get a lot of complaints from the young doctors, but the contrary was true. They were all happy and glad to be doing their job. In other words, the medical morale was extraordinarily high."

According to the physicians who made the tour, as of March 31 a total of 112,000 United Nations personnel have been airlifted in the Korean action with not one injury or death occurring due to air evacuation. This figure included all UN casualties, also persons lifted several times, as well as persons hurt from causes other than battle injuries. Twenty-two thousand American casualties have been airlifted from the Pacific back to the United States.

Left to Right: Dr. Russel V. Lee, Palo Alto, Calif.; Dr. John M. Murray, Boston; Dr. Cortez F. Enloe, Manhasset, Long Island; General Armstrong; Dr. Herbert B. Wright, Cleveland; Dr. William P. Holbrook, Tucson, Ariz., and Dr. Elmer L. Henderson, Louisville.

ARMY

Medical Work in Korea Praised by the Surgeon General.—Maj. Gen. Raymond W. Bliss, the surgeon general, declared after a 30 day tour of medical installations in Japan and Korea that in comparison with World Wars I and II the medical record in Korea is remarkable. General Bliss, who was accompanied on the tour by Maj. Gen. Edgar Erskine Hume, surgeon, FEC, left for Washington April 8.

He said that "about 98 per cent of all wounded or ill soldiers who come to Army hospitals live, in comparison with World War I's rate of 92 per cent and World War II's rate of 95.5 per cent. This enviable record has been accomplished through the administrative and technical direction of the officers in charge of the medical program in the Far East Command, from the highest to the lowest rank. It shows great forethought, energy and selfless devotion to duty and to the medical profession. Our troops are fighting in a country which is disease-ridden and where epidemics are common. Yet the sick rate of our troops in Korea is as low as with the troops in the United States. We have not had a single epidemic among the troops since they went into Korea. Most of the illnesses present in Korea are common colds and respiratory ailments. The remarkable record of low disease rate is accounted for by three main factors: first, education—the soldier is taught self-care in the prevention of disease; second, the immunization factor, accomplished by vaccinations which have been practically 100 per cent effective, and third, the sanitation factor, such as purification of water, care of food and cleanliness. Medical teams work as close to the front as possible so that the wounded get immediate care. Close behind the lines are the mobile Army surgical hospitals, which are set up so as to enable them to move in a matter of hours. The rapidity with which they move, the efficiency with which they operate amazed me. I saw the 8055th MASH unit arrive near Seoul and begin work almost immediately. This was the twenty-fifth move for this unit since its arrival in Korea. The day I was in Wonju half of the 8076th MASH unit had moved forward and was operating independently, while the other half remained behind, also operating as an independent unit. This unit had moved 15 times since its arrival in Korea."

General Bliss said the use of helicopters by these units has been most successful. Each MASH has a number of helicopters attached to its unit. The pilots live with the units, and their helicopters are in the "back yard" of the hospitals. When a call comes from a clearing station at the front lines the helicopter takes off and returns shortly with the patients. The helicopters in use in Korea carry two patients strapped in basket-type litters on the outside of the helicopter, but a new type that can carry eight litter patients inside the plane is being tested.

"We are constantly planning and doing research on preventive and curative medicine," General Bliss said. "The finest medical men in America have been sent to the FEC to teach and to learn. We have a continual chain of information going to research institutes in America, and we are utilizing the doctors who have returned from Korea at our institutions in America to train officers and enlisted men. I view this great medical achievement with the deepest humility. I offer my sincerest congratulations to the doctors, nurses, Women's Medical Specialist Corps, medical enlisted men and WAC medical technicians, who have made this record possible. In particular, I cannot pay enough tribute to the work of the nurses in Korea. The marvelous job they are doing under the most trying conditions and hardships exemplifies, to me, the great and admirable spirit of American women."

250 Reserve Officers Ordered to Active Duty.—The Department of the Army announced April 18 that 250 medical officers of the Medical Service Reserve will be ordered into active military service during May. The 250 officers are in Priority 1 as established by Public Law 779 of the 81st Congress.

This is the second group of medical officers ordered to active duty by the Army since Dec. 26, 1950, when 890 medical and 850 dental officers were called. During April 300 medical and 100 dental officers were ordered to active service.

The officers will be given at least 30 days in which to close out personal and business affairs, unless they wish to report at an earlier date.

For the first time the Department of the Army has called on Army areas outside the continental limits of the United States to furnish medical officers in the present emergency. Puerto Rico will provide 13 and Hawaii five.

Monthly Medical Meeting.—Dr. Theodore E. Woodward, associate professor of medicine, University of Maryland, presented a paper on "Antibiotic Therapy of Certain Pulmonary Lesions with Discussion of Their Nonspecific Roentgen Appearance" at the Surgeon General's monthly meeting April 19 at Army Medical Center, Washington, D. C.

MISCELLANEOUS

Associated Universities, Inc., and the Brookhaven National Laboratory.—Mr. Lloyd Berkner has been elected president of the Associated Universities, Inc., a nonprofit corporation formed by nine eastern universities to administer Brookhaven National Laboratory at Upton, N. Y., under contract with the U. S. Atomic Energy Commission. The nine universities are Harvard, Yale, Johns Hopkins, Columbia, Cornell, Princeton, Pennsylvania, Rochester and the Massachusetts Institute of Technology. The medical department of Brookhaven National Laboratory has under its jurisdiction a 36 bed research hospital, the first hospital in the world to be developed solely for the study of atomic energy medicine. Dr. Lee E. Farr, chairman of the medical department, is physician in chief of this hospital, and Dr. Donald D. Van Slyke is assistant director of the laboratory for the departments of biology and medicine. Since this small hospital was opened, in March 1949, patients have been admitted from all parts of the United States for study and treatment. The patients are admitted only after referral by their physicians. Mr. Berkner was a pilot in the first Byrd Antarctic expedition. He is a pioneer in technics in reflection of radio waves from the upper atmosphere and during World War II supervised the Navy air-borne radar program. Formerly, he was a research engineer at the National Bureau of Standards, Washington, and recently was on the staff of the Carnegie Institution of Washington. He is a native of Wisconsin and was awarded the Legion of Merit in 1945 for his radar research.

Commission Appoints Deputy Medical Director.—The Atomic Energy Commission has appointed Dr. John C. Bugher as deputy director of the Division of Biology and Medicine. Since 1938 Dr. Bugher has been a member of the staff of the International Health Division of the Rockefeller Foundation, engaged in research and control of infectious diseases. Much of his time with the Foundation has been devoted to the control of yellow fever in South America and Africa, although he has worked on the control of malaria and other tropical diseases and has been interested in the organization of health centers and medical education.

Dr. Bugher was born in Upland, Ind., in 1901. He received B.A., M.D. and M.S. degrees from the University of Michigan. In 1923-25 he was assistant in bacteriology at Michigan, and from 1929 to 1938 he was instructor and assistant professor of pathology at the Medical School, University of Michigan. During 1926-28 he was public health director for South Haven, Michigan.

Course in Psychiatric Nursing.—A one year postgraduate education course in psychiatric nursing to be given at Saint Elizabeths Hospital, Washington, D. C., beginning July 1 was announced April 2 by the Federal Security Agency. The program which will be under the direction of Saint Elizabeths Hospital in affiliation with The American University provides a stipend of $1,470 a year. Nurses will receive up to 30 hours academic credit as well as a year of supervised clinical experience. Full credit will be given by The American University toward a bachelor's or higher degree in psychology or education. Details may be secured from the Superintendent, Saint Elizabeths Hospital, Washington 20, D. C.

FOREIGN LETTERS

ITALY

Psychosurgery.—At the Medical Academy of Pistoja, at which Professor Cantieri presided, Professor Noto presented a report on prefrontal lobotomy for treatment of mental diseases and intractable pain. The speaker noted that only the fibers emerging from the dorsomedial nucleus of the thalamus reach the prefrontal lobe, transmitting to the cortex the affective impulses. The thalamus is the organ of affective life, and it is there that sensations receive the emotional charge. The frontal lobe is the cerebral area where the highest intellectual functions, such as thinking, social education, ethical sense, discrimination and foresight, have their seat. When one severs the nervous fibers that connect the dorsomedial nucleus of the thalamus with prefrontal areas, delirium, hallucinations and preoccupations lose their emotional charge and with it their strength.

Various technics have been devised to interrupt the transmission of impulses, e. g., leukotomy, lobotomy, topectomy and electrocoagulation of the dorsomedial nucleus of the thalamus. By this therapy, the obsessive syndromes, depressive states, schizophrenia, changes of character and the pain syndrome are benefited particularly. Schizophrenic patients showing the strongest reactions to this therapy are those in whom an emotive component is evident, manifested by disturbances of behavior, impulsive drives and acute delirium, accompanied by variations of the pulse, pupils and blood pressure.

Approximately one third of the surgically treated schizophrenic patients—all of them resistant to medical therapy and shock treatment—recovered, one third showed significant improvement and the other third did not benefit at all from lobotomy. In obsessive syndromes, in depressions and in pain of various type (tabetic syndrome, pain caused by carcinomatous metastasis) the results observed were gratifying in 85 to 90 per cent of the cases. Postoperative mortality was 1 to 2 per cent.

With respect to change of the patient's psychic personality, it is probable that such changes were present before intervention but were not manifest because they were submerged by the psychopathic symptoms. The achieved improvement then brought to light the deficiency, which according to the speaker is not attributable to lobotomy but to the psychosis itself.

To date, in 10 patients subjected to lobotomy according to Freeman and Watts' technic, there was one recovery, one transitory remission, and slight improvement in two of four schizophrenic patients, transitory remission in one epileptic patient, complete recovery of one patient with severe obsessive syndrome and diminished pain in cases of pain of various types. None of the patients became worse after leukotomy.

At the Calabrian Medico-Surgical Society, Professor Puca reported the results obtained in the first 40 patients on whom he performed leukotomy at the psychiatric Hospital of Aversa. His preferred operative method was leukotomy according to Moniz's technic with Fiamberti's transorbital modification; he asserted that this technic is the most rapid and simple of the operations made under direct vision. Leukotomy was performed only in patients who showed no response to other therapeutic methods for at least a year; in the majority of the cases, they were patients with schizophrenia of long duration. All in all, the results obtained were fairly satisfactory. No exacerbations were observed following surgery, although in one case the schizoid complex was supplanted by a syndrome of prefrontal deficiency accompanied by extraversion, hypomania and overactivity.

Marriage and the "Safe Period."—At the Fourth National Congress of the Italian Catholic Physicians held in Rome, one of the subjects discussed was the sterile period in the female cycle and its utilization in marriage. The first speaker, Dr. Cagol, discussed the biologic limits of the problem, emphasizing the importance of the Ogino-Knaus' theory.

The Reverend Dr. Pelloux presented the moralists' opinion on the utilization of this method in marriage, stressing that, unti the end of 1880, the court of the Holy See issued the repl "coniuges non sint inquietandos." However, it was not then a question of Ogino-Knaus' method, unknown at that time, but of the general problem whether husband and wife may deliberately choose the moment for copulation, provided it is performe without deceit. There cannot be a doubt about this point. Th discussion arose among those who demanded the assurance o grave reasons (health, economic status, social motive) in ord to permit the use of the "calendar" and others who upheld o the contrary the indiscriminate legality of choosing the steri days for copulation. Participants in the congress were also o divided opinions. Finally, Professor Palmieri concluded by poin ing out how the adoption of Ogino-Knaus' method may represe a solution in those cases in which offspring are not desirable fo reasons of acknowleged gravity.

Congress of Tropical Medicine and Hygiene.—The Eighth N tional Congress of Tropical and Subtropical Medicine an Hygiene was held at Motecatini-Terme, presided over by Pr fessor Girolami, director of the Clinic of Tropical Medicine o Rome. Professor Nauk, director of the Institute of Tropic Medicine of Hambourg, was also present. The reports presente all concerned amebiasis.

Professor Jacono, director of the Tropical Clinic of Naple discussed the clinical problem of amebiasis in Italy. Clinic manifestations are usually sporadic, with a chronic course, consisting either of constipation or of diarrhea alternating with constipation. In some cases, gastric and intestinal symptoms ca be elicited, as well as symptoms concerning other organs, or a state of avitaminosis may occur. Diagnosis must always b established by the observation of parasites in the form of pat genic amebas in the feces or other pathological material. An biotics, especially aureomycin, have become important in trea ment.

Professor Cannavó, director of the Tropical Clinic and of th Medical Clinic of Messina, made a complete survey of the anatomic and functional impairment of the liver in the course o amebiasis. He discussed amebic hepatitis and the role of the liv in intestinal amebiasis.

Professor Mazzeo, director of the Institute of Hygiene of th University of Naples, spoke about the hygienic problems o amebiasis. After presenting the essential characteristics of Entamoeba histolytica—the specific agent of the infection—he discussed in detail the sources and pathway of contagion, stressing particularly the importance of the soil and the water.

NORWAY

BCG Vaccination by Mouth.—Dr. H. J. Ustvedt, who is i charge of Department IX of the Ullevaal City Hospital, Oslo has begun to give BCG by mouth and has some interesting experiences to relate on this subject in the organ of the Norwegian Medical Association, *Tidsskrift for Den Norske Laegeforening* for March 1, 1951. Oral administration of BCG, as advocated by Calmette in France, has hitherto been considered inaccurate and unreliable in the Scandinavian countries. Heimbeck of Norway introduced vaccination by subcutaneous injection and Wallgren of Sweden the intracutaneous method, but the oral method has occasionally been given a trial in Norway. In 1935 Scheel succeeded in rendering 11 out of 20 students Pirquet-positive by giving them 50 mg. of BCG by mouth. At the present time the oral administration of BCG is practiced widely in Russia and on a large scale in France, and it is often preferred to the other methods for young children in Poland, Jugoslavia and Greece.

It is, however, largely the work of Arlindo de Assis in Brazil that has encouraged Ustvedt to pay serious attention to the oral

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The items in these letters are contributed by regular correspondents in the various foreign countries.

method, for which, he agrees, there is much to be said if only one can be sure it does actually render human beings tuberculin-positive. Ustvedt's material is instructive because of its quality rather than its quantity, for his few cases have been kept under close observation. They were few largely because it was almost impossible to find tuberculin-negative medical students who had not already been vaccinated with BCG by other methods. Generally the de Assis dosage was followed, with a first dose of 200 mg., i. e., a dose 20 times greater than that originally recommended by Calmette for the first dose. A subsequent dose of 100 mg. was given in some cases. There were no clinical reactions indicative of any harmful effect; among 10 persons on whom postmortem examinations were made seven days to four months after the administration of BCG no morbid changes could be found in stomach or intestines. There were also no abdominal symptoms or signs of cervical adenitis among the more than 50 healthy young persons kept under observation up to nine months after this treatment, which was given because they were tuberculin-negative or faintly tuberculin-positive after earlier vaccination with BCG. Ustvedt claims that BCG by mouth can achieve a tuberculin sensitivity of a high degree in some cases, but he has found that, when BCG given by intracutaneous injection has failed to achieve tuberculin-positivity, giving it by mouth is not likely to improve matters. In other words, it seems there are certain persons who continue to be tuberculin-negative because they are constitutionally incapable of reacting to BCG in whatever way it is administered.

The Duration of BCG Allergy.—There are still some puzzling discrepancies in the results obtained by BCG vaccination as practiced by different workers. Dr. T. Gedde-Dahl, secretary-general of the Norwegian National Association Against Tuberculosis, with headquarters in Oslo, has lately checked up the results of BCG vaccination of 826 members of the staff of the telegraph service in the city. There are more than 3,000 employees in this service, and the 826 given BCG vaccination were tested two to three months later by the Pirquet-epinephrine reaction, supplemented when necessary by a Mantoux test with 1 mg. of tuberculin. Nearly all the vaccinations were undertaken after 1940, and the records were collected and evaluated up to the end of 1949. The vaccinated persons were tested again with tuberculin once a year, and they were classified according to the degree of allergy that had developed. There were obviously positive Pirquet reactions at the one extreme and negative Mantoux reactions at the other. The vaccination technique was that by injection of BCG as recommended by Heimbeck and Wallgren.

It was most unsatisfactory that about 38 per cent were Pirquet-negative or Pirquet-doubtful after vaccination. A third of the 826 vaccinated persons were revaccinated, 7 per cent being vaccinated altogether three times. Such revaccination had often to be undertaken fairly soon after the first vaccination. Dr. Gedde-Dahl wonders why he has such a high rate of negative Mantoux reactions, entailing revaccination, while the Oslo Public Health Service has comparatively few failures. Does the difference, he asks, depend on interpretation of the reactions? If this personal factor plays an important part, one should revaccinate when in doubt. It is also important that one repeat the tuberculin testing of BCG vaccinated persons at least once a year and until potential sources of infection have been eliminated. If the vaccinated are not kept under subsequent tuberculin control, revaccination being performed when necessary, the whole system may become discredited and abandoned, even when it is most needed. Of the four persons, all women, who became tuberculous despite vaccination, two had been Pirquet-negative after vaccination. One of the main lessons of this study is that one must not be satisfied with BCG vaccination till he is certain that it has rendered the subject Pirquet-positive.

Mortality from Diseases of the Circulatory System.—Reference has already been made in The Journal (143:757 [June 24] 1950) to Professor Axel Strøm's observation that the prewar rising mortality from diseases of the circulatory system was followed during the war by a fall. Since the war there has been a rapid rise toward the prewar level. The wartime fall coincided with the German occupation of Norway and with severe dietary restrictions, chiefly with respect to foods containing fat, including those rich in cholesterol. In cooperation with Dr. R. A. Jensen, Professor Strøm published an account of these observations in the *Lancet* of Jan. 20, 1951. In the *Lancet* of Feb. 3, 1951, a letter from a correspondent suggested that Professor Strøm's figures and conclusions might be incorrect and that the German occupation of Norway might have impaired the accuracy and completeness of death registration during the war. This letter ended with the suggestion that the death rates of diseases other than those of the circulatory system might show similar features. In other words, was the behavior of the circulatory diseases before, during and after the war unique?

Professor Strøm's answer to this criticism is much to the point and shows the remarkable steadiness of the cancer death rate during the same three periods. He points out that faulty notification of deaths cannot explain the great variations in the mortality from the diseases of the circulatory system. Despite the difficulties entailed by the war, death notifications continued as before. No other mortality rates showed variations corresponding to those observed in the case of the circulatory diseases.

Leprosy in Norway.—There are now only a dozen cases of leprosy in Norway, all of them isolated in a hospital in Bergen. It has long been assumed that this minute remnant of what had been a veritable scourge would soon fade out of the picture altogether. But getting rid of leprosy is like trying to empty a jug of treacle of its last drops. Since 1940 half a dozen apparently new cases of leprosy have cropped up. A recently discovered case is that of a young woman living near Bergen. Her 24 year old brother has leprosy, and the mother, whose death occurred 20 years ago, had had leprosy.

SWITZERLAND

First Clinical Experiments with Cortisone in Ophthalmology.—Professor Franceschetti, head of the Ophthalmic Clinic of Geneva University, studied the local applications of cortisone in diseases of the eye; he used collyrium and ointment. The collyrium was used in two concentrations: 1 per cent and 2.5 per cent, instilled usually at the rate of one drop every two or three hours for mild cases and as a maintenance dose. The ointment has a concentration of 1 per cent; the results were also very satisfactory with only the ointment (once or three times a day), but it is not as easy to use as the collyrium.

From October 1950 to February 1951, Professor Franceschetti and his collaborators treated 24 patients. From the results they published it appears that the local application of cortisone is helpful in inflammatory diseases of the cornea and sclera. Remarkable results were obtained in a case of parenchymatous keratitis (congenital syphilis), a fact which seems particularly interesting since American authors have seen no clear amelioration following parenteral therapy (Steffenson, Woods).

The rapid action of cortisone is of particular value in superficial and deep keratitis, in which the duration is closely related to the extent of degeneration of tissue. The authors cite the case of a 40 year old woman in whom the sequelae of a deep keratitis had made necessary a corneal grafting of the right eye. Interstitial keratitis in the left eye had been progressive for six months and had already reached the pupil. Within a week, the deep vessels had completely disappeared; cure had lasted four months at the time of reporting. In epithelial keratitis, better results have been obtained with cortisone than with aureomycin.

Impressed by the effect of cortisone on the vasculary neoformations of the cornea, the Swiss authors tried this therapy in certain cases of keratoplasty in which there was a tendency toward invasion of the graft by the vessels. In two cases, the instillation of cortisone put a stop to the vasculary invasion of the graft.

There appeared to be no allergic reactions to cortisone ointment in a patient who could not previously tolerate any medicament. Woods has also observed blocking of sensitivity to atropine through pituitary adrenocorticotropic hormone (ACTH). Among the allergic diseases of the eye, vernal conjunctivitis seems to respond to treatment with cortisone.

Although spectacular results have been obtained with this hormonal therapy, it may be that the healing and the rapid amelioration constitute only an inhibition in the course of the disease.

MEDICAL LITERATURE ABSTRACTS

AMERICAN

A.M.A. Arch. Pathology, Chicago

51:249-360 (March) 1951

Hypertensive Disease Produced by Desoxycorticosterone Acetate in Parabiotic Rats. C. E. Hall and O. Hall.—p. 249.
Experimental Hypersensitivity in Rabbit: Cellular Localization of Soluble Azoproteins (Dye-Azo-Human Serum Albumins) Injected Intravenously. H. Latta, D. Gitlin and C. A. Janeway.—p. 260.
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Regression of Lesions in Canine Arteriosclerosis. M. Bevans, J. D. Davidson and F. E. Kendall.—p. 288.
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American J. Digestive Diseases, Fort Wayne, Ind.

18:1-42 (Jan.) 1951

Peptic Ulcer in Man: New Antacid Made to Meet Requirements of Antacid Therapy. H. Necheles, H. Kroll, S. P. Bralow and M. A. Spellberg.—p. 1.
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Behavior of Carob Gum in Gastrointestinal Tract of Man. A. A. Holbrook.—p. 24.
Chronic Involvement of Liver in Intestinal Amoebiasis. (Chronic Amoebic Hepatitis). R. Sandler.—p. 29.
*Antacids and Aureomycin. R. Greenspan, H. McLean, A. Milzer and H. Necheles.—p. 35.

Antacids and Aureomycin.—Aureomycin, although highly effective in the treatment of a variety of infections, is likely to produce epigastric distress, nausea, vomiting and diarrhea. Aluminum hydroxide gel has been recommended by some to control these gastrointestinal upsets. However, Greenspan and coworkers found in 10 subjects that when 30 cc. of aluminum hydroxide gel was administered 15 minutes before a single oral dose of aureomycin, the serum aureomycin levels were greatly reduced. Therefore, they advise against the simultaneous use of aureomycin and aluminum hydroxide gel. The authors tried the antacid sodium carboxymethyl cellulose (carmethose®) for the prevention of gastrointestinal upsets incident to aureomycin therapy. They found that when 30 cc. of this drug was given in the same manner as aluminum hydroxide gel it had no demonstrable effect on the aureomycin level of the serum and effectively diminished the gastrointestinal disturbances. They conclude that sodium carboxymethyl cellulose does not adsorb aureomycin in vitro and does not interfere with intestinal absorption.

Archives of Physical Medicine, Chicago

32:1-56 (Jan.) 1951

Physical Medicine and Rehabilitation in Europe. F. H. Krusen.—p. 10.
Measurement of Whirlpool Temperature, Pressure and Turbulence. F. A. Hellebrandt, S. J. Houtz and R. N. Eubank.—p. 17.
New Hydraulic Exercise Table. A. L. Watkins.—p. 27.
*Exercise in Treatment of Asthma. F. Baker.—p. 30.
Management of Decubitus Ulcers in Paraplegic Patient. G. S. Letterm C. S. Wise and W. C. Meloy.—p. 34.

Exercise in Asthma.—The aim of the program of exercise in asthma is, first, to train the patient in the correct pattern of breathing and, second, to restore normal muscle function and control. Training in the correct manner of breathing as opposed to the asthmatic type of breathing gives the patient a means of controlling the attack and a weapon by which he can overcome his fear. After discussing the functional anatomy of the structures involved in respiration, the author outlines a plan of treatment aimed at general relaxation and at retraining in the breathing pattern. Cooperation of the patient and of his family is essential for the success of the treatment, but close supervision by the physician is also essential. Time is saved if the patient is seen daily at first, the interval between visits being lengthened as control is gained. The patient must receive encouragement at the beginning, and, since fear has to be overcome, real authority is needed to make the patient persevere. Exercise can be of great value to the patient with asthma if it is carefully planned and diligently directed.

Illinois Medical Journal, Chicago

99:53-108 (Feb.) 1951

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Journal of Immunology, Baltimore

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Immunologic Comparison of Different Laboratory Lines of Lansin Strain of Poliomyelitis Virus. B. L. Bennett and J. E. Salk.—p. 277.
*Evidence for Dissociation of Titer of Infectious and Antigenic Activity i Preparation of Lansing Strain of Poliomyilitis Virus. J. E. Salk an B. L. Bennett.—p. 283.
Origin of Naturally Occurring Hemagglutinins and Hemolysins: Review A. S. Wiener.—p. 287.

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Titles marked with an asterisk (*) are abstracted.

Pediatrics, Springfield, Ill.

7:1-152 (Jan.) 1951

*Treatment of Disseminated Histoplasmosis with Ethyl Vanillate. A. Christie, J. G. Middleton, J. C. Peterson and D. L. McVickar.—p. 7.
Digestion of Protein by Premature Infants as Indicated by Nitrogen Absorption from Whole vs. Hydrolyzed Protein. M. S. Feinstein and C. A. Smith.—p. 19.
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Home Play and Occupational Program for Bedfast Child: Counterpane Course. F. F. Schwentker, A. F. Epperson and A. Hart.—p. 44.
*Use of Pertussis Agglutinogen Skin Test in Well Baby Clinic. N. Barysh.—p. 48.
Acute Infantile Gaucher's Disease: Case Report. C. L. Rodgers and S. H. Jackson.—p. 53.
Congenital Verbal-Audiotory Agnosia (Word Deafness). I. W. Karlin.—p. 60.
*Compression of Trachea or Esophagus by Vascular Anomalies: Surgical Therapy in 40 Cases. R. E. Gross and E. B. D. Neuhauser.—p. 69.
Meat in Diet of Premature Infants. T. R. C. Sisson, A F. Emmel and L. J. Filer Jr.—p. 89.

Ethyl Vanillate in Disseminated Histoplasmosis.—Although the great majority of infections from Histoplasmosis capsulatum are *benign to the point of being asymptomatic and clinically unrecognizable*, the increased interest in these infections is bringing to light also more cases that are disseminated and progressive. Many drugs, including penicillin, streptomycin, aureomycin, chloramphenicol, sulfonamides, iodides, arsphenamine, mercurials, stilbamidine (4,4-stilbenedicarboxamide) and other antimony preparations, have been tried without effect in the progressive and usually fatal form of histoplasmosis. The ethyl ester of vanillic acid, which is a byproduct in the manufacture of sulfite pulp, having shown fungicidal properties, was investigated for its effect on H. capsulatum. Ethyl vanillate in concentrations of 20 mg. per 100 cc. inhibited the growth of H. capsulatum. Christie and associates describe the physical and chemical properties of ethyl vanillate (ethyl 4-hydroxy-3-methoxy benzoate), outline a method for its quantitative analysis in blood and tissues, discuss its pharmacologic properties and then describe the histories of some of the 12 patients with histoplasmosis proved by cultures. The patients had histoplasmosis of the progressive and disseminated type and would have been expected to die within weeks or months if the usual course had not been interrupted. Five of these infants and children are still alive and well following the use of ethyl vanillate. The case histories indicate that the dosage varied not only from case to case, but also in individual cases. In the first case, for instance, treatment was started with 0.62 Gm. per kilogram of body weight per day in divided doses; later the dosage was increased to 1.25 Gm. per kilogram and then to 1.55 Gm. per kilogram per day. The treatment was continued for 47 days, and the patient recovered. In the other four who recovered, treatment was continued for 32 to 46 days. The margin between therapeutic and toxic levels is only about 25 to 30 per cent, a margin of safety too small for a desirable therapeutic agent. However, progressive disseminated histoplasmosis is so often fatal that use of any agent offering hope seems justified.

Pertussis Agglutinogen Skin Test.—Despite the wide use of pertussis vaccination some persons (12 to 14 per cent) still have limited protection against the disease after immunization. The authors studied 234 healthy infants from 1 week to 9 months old to ascertain whether the pertussis agglutinogen skin reaction could be employed as a routine procedure in a well baby clinic. In one group of 100 infants given skin tests with this material at least three months after pertussis prophylyaxis, it was found that 92 per cent had positive (immune) skin reactions. In a second group of 134 infants tested prior to pertussis vaccination, 83 per cent (111) had negative skin reactions. When 66 of these 111 infants were tested after pertussis prophylaxis, 92 per cent showed a positive skin response. It was proved that the skin test (1) is a sensitive indicator of the immune response produced by prophylactic vaccination and can therefore serve to determine the efficiency of the immunizing material used and (2) is a reliable indicator of a specific antibody response.

Compression of the Trachea or Esophagus in Vascular Anomalies.—Some vascular malformations in the superior mediastinum assume importance because a displaced vessel compresses the trachea and/or esophagus. This report lists the significant points of diagnosis and surgical therapy and the results of treatment in 40 babies and children who have been operated on for such vascular anomalies. These malformations can cause difficulties in swallowing and serious disturbances in pulmonary ventilation. They include double aortic arch, right aortic arch with a left ligamentum arteriosum, anomalous innominate artery, anomalous left common carotid artery and aberrant subclavian artery. The various symptom complexes that may be found with these anomalies are described. Endoscopic visualization of the interior of the esophagus or trachea gives valuable information in some of these cases. The investigation of these subjects should include fluoroscopic and film studies of the esophagus and trachea by contrast media. Surgical treatment is possible in nearly all these types of vascular malformations. In general, pressure on the esophagus or trachea can be relieved by division of an anomalous vessel or by displacement of an artery in such a manner that it is carried away from the compressed structure. If pulmonary infection is present, as is so frequently the case in these anomalies, preoperative chemotherapy and other measures should control this. For the administration of fluids or blood, it is wise to insert a cannula or a plastic catheter into an ankle vein. A closed system of ether or cyclopropane anesthesia was used. *An intratracheal tube is essential for the maintenance of an* adequate airway. The operative attack has been through a left anterolateral incision with a transpleural approach. Of 16 patients with double aortic arch, four died, two from hemorrhage during operation, one from cerebral edema on the day after operation and one from pneumonia 10 days after operation. The results in the surviving patients proved that the surgical treatment of this anomaly has great merit. There were no deaths in seven patients operated on for right aortic arch with left ligamentum arteriosum, but treatment in this condition can only alleviate not cure. The four patients who were operated on for anomalous innominate artery were completely relieved of their respiratory complaints. Two children operated on for anomalous left common carotid artery also obtained complete relief of respiratory distress. Complete disappearance of the symptoms existing prior to operation was observed in all the 11 patients who underwent surgical intervention for aberrant subclavian artery.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

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*Effect of Adding Carbon Dioxide to Inspired Air on Consciousness Time of Man at Altitude. F. G. Hall and K. D. Hall.—p. 140.
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Paper Chromatography of Blood Plasmas in Multiple Sclerosis. R. L. Swank, A. B. Franklin and J. H. Quastel.—p. 183.

Cortisone and Virus Concentration in Eggs.—The profound effects of adrenal cortical steroids on the growth and development of the chick embryo suggested the use of these hormones to alter host metabolism. Mumps and influenza viruses were used because of the relative ease and precision with which their concentration may be measured by the hemagglutination reaction. The PR 8 strain of influenza A virus, the Lee strain of influenza B virus and the Habel strain of mumps virus were employed. Groups of 7 to 10 day old fertile white leghorn eggs were injected in the yolk sac with cortisone or control material 30 minutes to 48 hours prior to the introduction of virus by the allantoic route. Eggs were incubated thereafter at 35 C. (95 F.) for 32 to 52 hours when infected with influenza virus and for 131 hours when mumps virus was employed. It was found that the concentration of all three of the aforementioned viruses in the allantoic fluid of eggs injected with cortisone acetate is significantly greater than the concentration of these agents in the allantoic fluid of control eggs.

Consciousness Time at Altitude.—The time of useful consciousness was determined in a decompression chamber with constant ambient pressure. The subjects alternately breathed pure oxygen and gas mixtures from Douglas bags. Addition of certain amounts of carbon dioxide to ambient air at low barometric pressures increases the duration of useful consciousness in human subjects. This effect is more pronounced at lower than at higher simulated altitudes.

Southern Medical Journal, Birmingham, Ala.

44:85-178 (Feb.) 1951. Partial Index

Effect of X-Irradiation on Erythrogenesis, Plasma and Cell Volumes. J. Furth, G. A. Andrews, R. H. Storey and L. Wish.—p. 85.
Streptomycin and Promizole in Treatment of Tuberculous Meningitis in Children. E. L. Kendig Jr., F. L. Angel, K. Bailey and others.—p. 92.
Position of Value in Studying Pelvis and Its Contents. G. Raap.—p. 95.
Vaginal Ureterolithotomy. R. F. Sharp and M. M. Green.—p. 99.
Hodgkin's Disease Complicated by Pregnancy. B. McSwain and A. Haber Jr.—p. 105.
Carcinoma of Extrahepatic Bile Duct: Review of Recent Literature and Case Report. W. F. Martin and G. D. Page.—p. 109.
Indirect Air Cystoscopy. J. H. Ridley.—p. 114.
Relative Importance of Chemotherapy, Antibiotics and Surgery in Treatment of Acute Otitis Media and Mastoiditis. W. D. Stinson.—p. 128.
Relation of Public Health and Medical Practice. T. F. Sellers.—p. 133.
Laryngeal Emergencies in Infants and Children. G. S. McReynolds. —p. 134.
Herpes Laryngis, Herpes Zoster of Vagus Nerve. F. H. McGovern. —p. 137.
Humidity: Its Relation to Problems in Dermatology. W. M. Sams. —p. 140.
Failures in Medical Treatment of Peptic Ulcer: Analysis of Intractability as Indication for Surgery. D. F. Marion.—p. 148.
Medical Education in Time of National Emergency. M. A. Casberg. —p. 153.
Nutrition in Relation to Soil. C. W. Woodruff.—p. 161.

Surgery, St. Louis

29:1-162 (Jan.) 1951

Relation of Autonomic Nervous System to Gastric Secretion with Particular Reference to Sympathetic Nerves. P. W. Shafer and C. F. Kittle.—p. 1.
*Late Results of Vagotomy in Treatment of Idiopathic Ulcerative Colitis and Regional Enteritis. F. D. Eddy.—p. 11.
Venous Thrombosis: Analysis of 580 Cases. A. Ochsner, M. E. DeBakey and P. T. DeCamp.—p. 24.
*Ambulatory Venous Pressure Determinations in Postphlebitic and Related Syndromes. P. T. DeCamp, R. J. Schramel, C. J. Ray and others. —p. 44.
Treatment of Varicose Veins with Flexible Stripper. E. C. Emerson and J. J. Muller.—p. 71.
Technique for Producing Pulmonary Artery Stenosis. C. A. Hufnagel, B. B. Roe and A. C. Barger.—p. 77.
Impressions Concerning Putti-Platt Reconstruction Operation for Recurrent Shoulder Dislocation. E. A. Brav and W. H. Gulledge.—p. 82.
Repair of Pararectus Incisional Hernias by Posterior Transposition of Anterior Rectus Sheath. L. J. Kleinsasser.—p. 97.
Use of Homograft in Surgical Treatment of Large Omphaloceles. K. J. Welch.—p. 100.
New Surgical Procedure for Complete Rectal Prolapse in Mentally Ill Patient: Case Report. S. J. Stabins.—p. 105.
Benign Tumors of Esophagus: Report of Case of Leiomyoma. W. L. Garlick and J. G. Stegmaier.—p. 109.
Acute Abdominal Symptoms from Bleeding Ovary: Analysis of 84 Proved Cases. R. F. Grise and C. B. Morton.—p. 117.
Simply Constructed Abdominal Support for Postural Hypotension. H. B. Schumacker Jr. and H. H. Ziperman.—p. 124.
Surgical Approach to Atelectasis of Newborn Infant: Preliminary Report. E. Berglund and W. P. Eder.—p. 127.
Aerobacter Aerogenes Meningitis Successfully Treated with Streptomycin. J. Helsper and J. Bonzer.—p. 131.
Simplified Approach to Pituitary Region by One and One-Half Inch Trephine. W. B. Scoville and R. McLaurin.—p. 136.

Vagotomy in Ulcerative Colitis and Regional Enteritis.—Eddy presents the results of a three year follow-up study on 42 patients who underwent vagotomy for ulcerative colitis. Few of the patients had a dramatic return to normalcy. The usual course was a progressive lapse into a quiescent state with healing of the previously involved bowel. Such improvement may follow any regimen, whether surgical or nonsurgical, but it must not be assumed that the improvement noted after vagotomy is due solely to a coincident remission. In most instances the operation has broken a previous cycle of remission and exacerbation or has ended a continuously chronic process, and the patient has been restored to his previous health status and means of livelihood. Twelve of the patients became symptom free, 18 improved, three improved after they had also been subjected to colectomy, four showed no change, two became worse and the remaining three died. Thus within a three year follow-up period, a majority of patients with idiopathic ulcerative colitis and regional enteritis responded favorably to division of the vagus nerves. Patients in whom the disease existed for five years or more responded less favorably to vagotomy than did patients with commensurately severe disease of lesser duration. Subjective and objective improvement may occur, and yet there may continue in the colon an inflammatory reaction indistinguishable from carcinoma except by pathological examination. Such patients require colectomy. The vagotomized colitic patient in whom gastroduodenal disease did not exist displays decreased gastric motility for a longer period and shows a more consistent result with the Hollander insulin test than does the peptic ulcer patient treated by vagal section. Vagotomy appears to reduce intestinal motility and spasm. It also interrupts a cycle of nervous and emotional imbalance that influences the colon. If extended to patients not suited for this treatment, it will produce disappointing results. In the face of a high cancer incidence in colitis patients, a treatment aimed at salvage of the colon requires critical evaluation.

Venous Pressure Determinations in Postphlebitic Syndrome.—In an effort to study objectively the physiological changes in the venous system of the lower part of the leg associated with the postphlebitic and related conditions, De Camp and associates devised a simple method to measure the pressure relationships in the veins of the foot or lower part of the leg in the recumbent, erect and walking subject. A comparison of the mean venous pressures in 10 normal subjects, in 11 patients with postphlebitic sequelae and in nine patients studied at long intervals following ligation of the deep veins of the leg shows rapid and extensive fall in venous pressure on ambulation in normal subjects as contrasted with slow and restricted fall under similar circumstances in patients with deep phlebitis, or those who have had deep vein ligation. The slow venous pressure rise on cessation of ambulation in normal persons is again in contrast with the rapid rise in the other two groups. Anatomic and physiological evidence is presented to indicate that clinical states closely resembling the postphlebitic syndrome may occur in the absence of demonstrable venous lesions and that valvular incompetence of the deep venous system occurs in apparently normal persons. The authors feel that ligation of deep veins of the leg for chronic lower leg conditions must be considered an experimental procedure. All reported evidence to date indicates that it has an adverse effect on the venous hypertension in the leg. If the procedure is to be performed on an experimental basis, ambulatory venous pressure studies are indicated to assist clinical evaluation of the results. It is also imperative that it be done as an isolated procedure, in order that its clinical effect may be accurately evaluated. The authors feel that they are forced to reverse their previous opinion and conclude that deep vein ligation for chronic conditions of the lower leg is, on the basis of present evidence, not indicated except to prevent recurrence of embolic phenomena.

Virginia Medical Monthly, Richmond

78:57-110 (Feb.) 1951

Tuberculosis and Pregnancy. C. L. Harrell.—p. 59.
Removal of Migratory Intravascular Foreign Body from Heart. W. R. Sandusky.—p. 64.
Effectiveness of Aureomycin in Treatment of Tularemia: Report of Two Cases. E. S. Robertson, C. T. Jones and G .E. Snider.—p. 71.
Rhinological Aspects of Chronic Dacryocystitis. F. H. McGovern.—p. 74.
Poliomyelitis—Review of 53 Acute Cases Observed from Orthopedic Service at University of Missouri Hospital, Columbia. V. R. May Jr. —p. 77.
Cortone Therapy in Acute Gout. N. Bloom and E. Toone.—p. 84.
Food Allergy, Its Application. M. Millman.—p. 87.

FOREIGN

British Journal of Radiology, London

24:1-56 (Jan.) 1951

Achievement in Radiation Dosimetry, 1937-1950. E. H. Quimby.—p. 2.
Modern Radiation Hazards in Clinical Practice. W. V. Mayneord.—p. 6.
Simple Radium Detector for Use on Radium Wards. J. Vennart.—p. 12.
Physical Measurements in Routine Clinical Diagnosis with I^{131}. J. F. Tait, J. R. Cook and R. Worsnop.—p. 14.
Obituary. G. Forssell.—p. 17.
Sources of Error in Production and Measurement of Standard Radiographs of Foot. P. Venning and R. H. Hardy.—p. 18.
Kartagener's Syndrome with Anomalous Left Subclavian Artery. J. Kaye and R. M. Meyer.—p. 27.
Intracranial Calcification in Toxoplasmosis. D. Sutton.—p. 31.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

94:3741-3788 (Dec. 30) 1950. **Partial Index**

Influence of Environmental Factors on Development of Cancer in Mammary Gland of Mouse. O. F. E. Mühlbock.—p. 3747.
Surgical Mortality in Modern Therapy. M. W. van Weel.—p. 3755.
*Dangers Involved in Careless Removal of Rubber Gloves. E. van der Kuyp.—p. 3769.

Dangers in Careless Removal of Rubber Gloves.—One of the reasons for the use of rubber gloves is protection of the examiner and attending personnel against infection when infectious material has to be touched and handled. This aim is often completely negated when the gloves are removed carelessly, because infectious material and organisms are scattered onto the clothing of the examiner and of the patient and onto the floor and furnishings. Before a used glove is removed it should be washed under running water and then removed slowly and carefully over a sink. After that the hands should be washed at once.

Prensa Médica Argentina, Buenos Aires

37:3167-3210 (Dec. 29) 1950. **Partial Index**

*Cervical Cancer: Cytodiagnosis of Hematoxylin-Eosin-Stained Smears. R. G. Giardini.—p. 3188.

Cervical Cancer.—Giardini used Papanicolau's method for cytodiagnosis of cancer of the cervix of the uterus in 21 women with a clinical diagnosis of carcinoma of the cervix in various stages of evolution. The cervical material for the smears was obtained by the method of so-called superficial biopsy, which gives material from the internal and external aspects of the cervix through rotation of a piece of cotton mounted on a cotton-holder. Hematoxylin-eosin was used as a stain. The results of the cytodiagnostic method were positive on the first smear in 19 cases and on the fifth and eighth smears, respectively, in the remaining two cases. The diagnosis of cervical cancer was confirmed in all cases by biopsy.

Presse Médicale, Paris

59:41-56 (Jan. 17) 1951. **Partial Index**

*Toxic Diffuse Goiter Syndromes of Diencephalohypophysial Origin. L. de Gennes, H. Bricaire, I. Benzecry and J. Villiaumey.—p. 41.
Increasing Importance of Paratyphoid B Fever in Group of Typhoparatyphoid Infections and Its Strong Predominance in Children. J. Boyer, L. Corre and M. Tissier.—p. 47.
Spina Bifida and Hydrocephalus (Arnold-Chiari Syndrome). M. Pasquié.—p. 50.

Toxic Diffuse Goiter of Diencephalohypophysial Origin.—Clinical observations on seven women between the ages of 19 and 53 and physiological studies on rats and tadpoles suggest two etiological phases in toxic diffuse goiter. The term diencephalohypophysial phase was coined for the first phase, in which the thyroid hyperfunction is elicited by an excessive secretion of the pituitary thyrotropic hormone. The term thyroid was applied to the second phase, which is only the consequence of the first phase in the majority of cases but which may take an autonomous course after hyperthyroidism has lasted for some time. Either of these two phases may predominate, and each results in a distinct clinical form of hyperthyroidism, with correspondingly different treatment. In the diencephalohypophysial form, a disturbance of the equilibrium of the sex hormones may be the precipitating factor in women, and administration of large doses of androgens or estrogens may be effective in the early stage of the disease. If this fails, administration of synthetic antithyroid drugs combined with 1.5 mg. of thyroxin per day is advisable. Thyroideotomy is indicated in those cases in which hyperthyroidism does not subside completely as a result of treatment with the synthetic antithyroid drugs or in which hyperthyroidism shows a tendency to recur after the antithyroid dose is reduced. Thyroidectomy may be preferred to antithyroid chemotherapy in male patients. In patients in whom the symptoms of hyperthyroidism predominate, antithyroid chemotherapy and, in case of its failure, thyroidectomy should be considered. In the diencephalohypophysial type paraoxypropiophenone (H 365) seems to be a powerful hypophysial inhibitor, but experience with this drug has been too limited for definite evaluation. It is advisable to caution against surgical treatment after treatment with these substances (testosterone, estrogens, thyroxin and paraoxypropiophenone) has failed in cases of diencephalohypophysial type. Irradiation of the pituitary and of the thyroid might be preferred to thyroidectomy.

59:77-100 (Jan. 24) 1951. **Partial Index**

Technique, Indications and Results of Arthroplasty of Hip with Insertion of Inert Material. R. Merle d'Aubigné, J. Cauchoix, J. Ramadier and M. Postel.—p. 77.
Advantages of New Coumarin Derivative for Treatment of Recent Phlebitis of Deep-Seated Veins. C. Olivier.—p. 82.
*Hormone Therapy and Bone Metastases of Cancer of Breast. P. Gibert.—p. 84.
Male Sterility, Spermatogenesis and Formation of Spermatophages. H. Bayle and C. Gouygou.—p. 87.

Hormone Therapy of Cancer of Breast.—Thirty-four women with cancer of the breast and bone metastases are reported on. Thirteen of the 34 submitted to ovariectomy, and six were sterilized by irradiation therapy. Twenty-seven, including some of those treated surgically or by irradiation, received hormone therapy by implantation of testosterone propionate pellets into the adipose tissue of the abdominal wall in doses rapidly increased from 600 mg. to 28 Gm. Seven of the 34 patients died without relief from pain and without roentgenologic improvement in the bone lesions. Of the remaining 27 patients, all of whom were given testosterone propionate, three died without improvement; six survived for several months without showing definite arrest of the disease; 10 were definitely improved for a period of 12 to 15 months; six apparently recovered for at least two years, and two led a normal life for five and six years respectively, despite diffuse bone lesions. Hormone therapy is only palliative, and the results observed by the authors are comparable with those observed by other investigators. Rapid improvement of the general condition of the patients, relief from pain and repair of bone, although only temporary, justify the use of testosterone propionate in the treatment of cancer of the breast. Extensive bone metastases seem to respond better to the treatment than those limited to one part of the skeleton.

Male Sterility.—Two hundred and seven biopsies of the epididymis were obtained in the course of epididymodeferential anastomosis performed on 120 men between the ages of 31 and 41 with mechanical azoospermia. The epididymal obliteration in the majority of the patients was secondary to various infectious processes in the tail or middle portion of the epididymis. In 10 patients a testis had never functioned because of the congenital absence of a portion of the vas deferens or the epididymal body. Spermatozoa were present in 177 of the 207 biopsy specimens, proximal to the obliteration. The globus major was distended because of the presence of a large number of spermatozoa in all 10 cases of congenital absence of the epididymal body or of the lower portion of the vas deferens. Spermatogenesis is not suppressed by the obliteration of the spermatic path at the level of the epididymis. In the distended epididymis many macrophages containing spermatozoa were observed, i. e., spermatophages. Under certain conditions rupture of the epididymis results from this distention, and spermatozoa infiltrate the interstitial tissue, a process for which the term spermatorrhagia is suggested. The spontaneous origin of this spermatorrhagia is demonstrated in certain cases. In the center of the spermatic infiltration collapsed fragments of the epithelium of the ruptured tube may be observed presenting an aspect similar to that of a

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An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

dissecting aneurysm of the large arteries. An intensive foreign body reaction may occur in the infiltration as such. Evidence of continued spermatogenesis, confirmed by the necessary process of absorption, and the fragility of the distended tubes are to be considered as firm morphological justification of epididymodeferential anastomosis.

Revista Clínica Española, Madrid

39:153-214 (Nov. 15) 1950. **Partial Index**

*Recent Studies on Cicerism and Nature of CH Factor. F. Vivanco, C. Jiménez Díaz and J. Palacios.—p. 168.
Short Esophagus with Ectopia of Stomach. C. G. Turner.—p. 172.

Cicerism and CH Factor.—Vivanco and co-workers report experiments on 40 white rats that were given a diet in which the only source of protein was the albumin of the chick pea. The rats were divided into five groups of eight each. A basal diet, consisting of purified albumin of the chick pea (20 per cent); starch (61 per cent); olive oil (12 per cent); hog fat (three per cent), and a saline mixture (four per cent), was given to the first group. Methionine was added to the diet when it was given to the second group; vitamin B_{12} was added in the third; crude liver extract in the fourth, and steamed liver extract in the fifth. All the animals that received only the basal diet (group 1) presented the picture of typical cicerism (the equivalent in animals of the human disease lathyrism). Cicerism did not occur in animals that received methionine or crude or steamed liver extract. Cicerism appeared in 87.5 per cent of the animals that received the diet with B_{12} added. The experiments show the existence of a vitamin, which the authors call the CH factor, that is found in liver extracts. It is water soluble and thermoresistant. This CH factor has a double effect when added to a diet that has a vegetable source of proteins: 1. It increases the biologic value of the vegetable protein and thus makes it similar to that of the animal proteins. 2. It exhibits a protective effect against the toxic action of leguminous foods (lathyrism in humans, cicerism in rats). In the absence of a certain level of methionine or choline in the diet, the CH factor is necessary. The authors conclude that this CH factor intervenes in the metabolic processes in such a way as to correct this deficiency of methionine or choline. Vitamin B_{12} does not have any relation to the CH factor since it does not afford any protection against cicerism and does not increase the biologic value of the proteins of the leguminous foods. The CH factor is considered as being one of the essential components of the animal protein factor. Methionine can be substituted for the CH factor.

Schweizerische medizinische Wochenschrift, Basel

81:75-94 (Jan. 27) 1951. **Partial Index**

Hyperestrinism: Symptomatology, Etiology and Treatment. E. Gruber.—p. 75.
Erythrocyte Count at Moderate Altitudes. A. Bühlmann, S. I. Wang, H. Wirz and F. Verzár.—p. 80.
Oxygen Saturation of Arterial Blood in Men and Rabbits at an Elevation of 1,800 Meters, in Correlation with Increase of Erythrocytes. S. I. Wang, H. Wirz and F. Verzár.—p. 82.
*Behavior of Tuberculin Sensitivity in Streptomycin Therapy of Tuberculosis. S. J. Leitner, O. Wetterwald and W. Beutl.—p. 87.

Tuberculin Sensitivity During Streptomycin Therapy.—The observations reviewed here were made on 124 patients, of whom 79 were treated with streptomycin. It was found that the tuberculin sensitivity decreased during streptomycin therapy in 52 of the 79 cases. The reduction in sensitivity was particularly pronounced while the first 30 to 50 Gm. of the drug were being administered. This is also the period of greatest efficacy of the antibiotic, as shown by clinical observations. In 16 patients in whom tuberculin reaction remained stationary and in three patients in whom it became stronger the clinical effect of streptomycin therapy was less favorable. This seems to indicate some parallelism between reduction in tuberculin sensitivity and clinical improvement. In six patients who received no treatment and in 10 who were treated with paraaminosalicylic acid, there was no decided decrease in tuberculin allergy. Parallel tests with a mixture of tuberculin and streptomycin and with a mixture of tuberculin and phenol revealed no reduction in intracutaneous reaction with the first of these two mixtures. Thus, decrease in tuberculin sensitivity in the 52 patients cannot be ascribed to the streptomycin content of blood but must be ascribed to the effect of the drug on the tuberculous focus. The following points seem noteworthy. 1. The prognosis is favorable if the tuberculin reaction decreases in the course of clinical improvement. 2. The noticeable changes in tuberculin sensitivity during the initial period of treatment with streptomycin suggests the advisability of a short period of treatment with streptomycin, a sort of "crisis" therapy. 3. An increase in tuberculin sensitivity may be difficult to interpret. Although it was observed in patients who did not respond to streptomycin, it is nevertheless possible that an increase in intensity in a formerly weak reaction in patients with serious forms of tuberculosis (meningeal or miliary) may signify that the antibiotic exerts a favorable influence. 4. The continuous observation of tuberculin sensitivity during streptomycin therapy may serve as a guide to the efficacy of the treatment.

Wiener klinische Wochenschrift, Vienna

63:21-36 (Jan. 12) 1951. **Partial Index**

Pathologic and Clinical Aspects of Spina Bifida. H. Moser.—p. 21.
Vitamin C Consumption During Treatment with Adrenal Cortex Hormone. A. Ferstl, E. Heppich and J. Schmid.—p. 28.
*Edema After Prolonged Use of Hypnotics (Urea Derivatives). W. Krisch.—p. 31.

Edema After Prolonged Use of Hypnotics.—The first of the three cases reported here concerned a man aged 48 who for years had had edema of both legs. Repeated examinations for possible heart lesions revealed no abnormality. Suspected renal insufficiency also could not be verified. In view of his occasional visual disturbances and of the edema, it was assumed that some toxic factor had altered the permeability of his blood vessels. The patient admitted that for about 15 years he had taken some hypnotic to induce sleep almost daily. These hypnotics had been mostly urea (carbamide) derivatives. The edema subsided after treatment with derivatives of aminopyrine. This patient had a relative with a tendency to edema. The author gives the histories of two other patients who also had been in the habit of taking hypnotics of the group of urea derivatives and also had the edema. The author observed all three of these cases in the course of six months. He believes that the increase in the permeability of the membranes is the result of a toxic effect of urea.

Zeitschrift für Kinderheilkunde, Heidelberg

69:1-98 (No. 1) 1951. **Partial Index**

Significance of Colon Bacilli for Pathogenesis of Nutritional Disturbances in Nurslings. O. H. Braun.—p. 1.
In Vitro Experiments to Ascertain Justification of Combined Therapeutic Application of Streptomycin and Penicillin. I. Gattung.—p. 26.
Ollier's Growth Disturbance. J. Harzheim.—p. 37.
*Psychologic Changes in Children in the Course of Tuberculous Meningitis Treated with Streptomycin. A. Külz.—p. 62.
Lipochondrodystrophy of the Pfaundler-Hurler Type with Special Consideration of Early Cases. W. Menger.—p. 74.

Psychological Changes During Streptomycin Treatment of Tuberculous Meningitis.—Before the introduction of streptomycin, tuberculous meningitis usually was an acute process that terminated fatally within a few weeks. Now there is a possibility of eventual cure, and many cases take a more chronic course. As a result of this chronicity many changes, indiscernible when the disease was more rapidly fatal, now become apparent. The author presents the histories of 13 children who showed various psychotic and encephalitic disturbances in the course of prolonged streptomycin therapy. In older children the author observed delirious states and a typical Korsakoff psychosis. Children up to 7 years old had mental disturbances that ordinarily are observed only in very young children with cerebral processes such as convulsive motor unrest. In addition to this, children of various ages showed prolonged development of typical encephalitic pictures with severe psychotic disturbances. There were psychoses lasting only a few days and some extending over several months. They developed at the onset of the disease, during relapses or during the stage of defervesence after long periods of fever. Some of them disappeared completely and some terminated in death. On the whole, the prognosis of tuberculous meningitis seems to become more unfavorable if a psychosis develops. At any rate, general improvement is usually greatly retarded when a psychosis occurs.

BOOK REVIEWS

The Biology of Human Starvation. By Ancel Keys and others. With ewords by J. C. Drummond, Russell M. Wilder, and Charles Glen ng and Robert R. Williams. Volumes I and II. Cloth. $24, per set. 763; 767-1385, with 158 illustrations. University of Minnesota Press, nneapolis 14; Oxford University Press, Amen House, Warwick Sq., ndon, E.C.4, 1950.

This scholarly work admirably fulfils the intent of its authors provide an inclusive critical treatise on human starvation nd undernutrition. The need of such a book was made clear o the authors when in 1944, after several years' work on the nmediate problems of military sustenance, they turned their ttention to the larger questions of the feeding of peoples. The xperimental background of these volumes was provided by the ustly famous Minnesota Experiment in which conscientious bjectors from the Civilian Public Service Unit voluntarily nderwent semistarvation for a period of 24 weeks, during hich time appraisals of performance were made by a battery f technics designed to reveal metabolic disturbances and hanges in physical capacity and psychological makeup. In ldition, the pertinent literature has been critically reviewed nd almost 100 pages of references are included at the end of e second volume. Sir Jack Drummond, the British biohemist, in a foreword points out that the findings of the Minesota Experiment correlate well with field observations in Western Europe during and after World War II, while Prossor Russell Wilder of the Mayo Clinic emphasizes the npetus this work should give to much needed studies on starvation accompanying disease. In the third foreword, Dr. . G. King, scientific director of the Nutrition Foundation, and Dr. Robert R. Williams, chairman of the Williams-Waterman Fund, laud the planning and execution of the Minnesota Experiment and give a timely warning that it was not designed o throw light on partial deficiencies and imbalances of pecific nutrients.

These volumes should be of great value as a reference not nly in the field of nutrition but in many other fields, includng morphology, biochemistry, physiology and psychology. Fornately a substantial subsidy for publication was provided by he Nutrition Foundation, Inc. and the Williams-Waterman Fund, and this permits a selling price which should allow a wide distribution of this important work.

Genetic Neurology: Problems of the Development, Growth, and Regeneration of the Nervous System and of Its Functions. Edited by Paul Weiss. Conference sponsored by International Union of Biological Sciences subdized by UNESCO. Cloth. $5. Pp. 239, with illustrations. University of Chicago Press, 5750 Ellis Ave., Chicago 37, 1950.

This book is composed of the 20 papers presented at the International Conference on the Development, Growth and Regeneration of the Nervous System held at the University of Chicago on March 21 to 25, 1949. The authors are among the outstanding investigators of the nervous system from all parts of the world. They represent such fields as physiology, anatomy, embryology and zoology. It seems unfortunate that although the subject of regeneration within the nervous system, particularly the peripheral nerves, receives much consideration, no one primarily concerned with the human nervous system from a clinical or surgical standpoint has contributed to this symposium. This deficiency is indicative of the all too prevalent, even though unexpressed, attitudes that the study of human anatomy and physiology is not truly scientific and that facts found to be true for lower forms are necessarily directly applicable to man.

This disdain for the human nervous system goes hand in hand with another defect which is all too common in the writings of many scientists engaged in investigations in the more highly specialized basic biological sciences. Some of them fail to define their terms. Some do not state the facts clearly, nor do they phrase their hypotheses sufficiently concisely to be readily intelligible to others who are interested in the field but not conversant with their highly technical language. As is to be expected in the writings of so many different authors, there is great variation in the different chapters of this book. For instance, the sentence structure and the choice of vocabulary is poor in the chapters "An Introduction to Genetic Neurology" by Weiss and "The Colloidal Organization of the Nerve Fiber" by Schmidt. On the other hand, the chapter by Speidel, "Adjustments of Peripheral Nerve Fibers," is clearly and concisely presented.

A number of chapters are very brief, two to three pages, and constitute little more than short summaries or statements of the particular problem under consideration by the author. This is true of "Neuropathology and the Constitutional Diversity of Neurons" by Bodian, "The Cytological, Biochemical and Physiological Differentiation of the Neuroblast" by Flexner, "Spinal Cord Regeneration" by Hooker and "Some Comments on Regeneration in the Central Nervous System" by Stefanelli. On the other hand, no one can fail to be stimulated by the thoughtful chapter on "Nerve Regeneration" by the famed Dutch histologist, Jan Boeke.

This is not a source book or reference book. It does serve, however, to give those scientists interested in the nervous system who were not fortunate enough to be present at the conference parts of the discussions and their flavor. Each chapter contains numerous references to the literature. There is no index. The illustrations consist of a handful of line drawings and a few tables and graphs.

Pain and Its Problems. Edited by Sir Heneage Ogilvie, K.B.E., D.M., M.CH., and William A. R. Thomson, M.D. Practitioner Handbooks. Cloth. 12s.6d. Pp. 194. Published on Behalf of Practitioner, 5 Bentinck St., London, W.1, by Eyre & Spottiswoode, 15 Bedford St., Strand, London, W.C.2, 1950.

The editors of this book are well known in their fields. The book, part of a series which so far consists of 15 handbooks providing for ready reference medical information of practical usefulness, contains 18 chapters, each written by someone familiar with the field he is reporting. The book is written primarily for the practicing clinician, with emphasis on the practical aspects of the problem, particularly treatment. Thus the reader may find information on the physiology of pain, the meaning and measurement of pain, cardiac pain, pain in peripheral vascular disease, pain in respiratory disease, pain in diseases of the nervous system, headache and other medical problems. This is a useful collection of medical information and will be particularly welcomed by general practitioners and students.

Plasma Clot Suture of Peripheral Nerves and Nerve Roots: Rationale and Technique. By I. M. Tarlov, M.D., Associate Professor of Neurosurgery, New York Medical College, New York. Cloth. $5.50. Pp. 116, with 47 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; The Ryerson Press, 299 Queen St., W., Toronto 2B, 1950.

It has been well recognized that present suture methods, even in the most skilled hands, are gross and traumatic. A newer, gentler technic, if successful, fulfils a great need. The author gathered all available information on his subject. A full chapter is devoted to the discussion of suitable types of plasma and includes a discussion of the mold employed in clot suturing. A combination of this technic with tantalum wire tension sutures is described. There is a valuable and illuminating chapter on the author's technic of nerve graft. Experimental work on the repair of cauda equina lesions by nerve graft and clot sutures is presented. This technic seems to be successful in monkeys, and the author implies that it should be successful in man. If this is the case, much has been accomplished. Unfortunately, however, peripheral nerve recovery, following repair, is well known to be much more successful in experimental animals than in man. This book can be unqualifiedly recommended for all interested in the surgical repair of peripheral nerve injuries.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

The Dispensatory of the United States of America: 1950 Edition. By Arthur Osol, Ph.G., M.S., Ph.D., Professor of Chemistry and Director of Department of Chemistry, Philadelphia College of Pharmacy and Science, Philadelphia, George E. Farrar, Jr., M.D., F.A.C.P., Associate Professor of Medicine, School of Medicine, Temple University, Philadelphia, and others. Advisory Editor: Horatio C. Wood, Jr., M.D., Ph.M., Professor of Pharmacology, Philadelphia College of Pharmacy and Science, Philadelphia. Volume I, Parts 1-5: Based on thirteenth revision of United States Pharmacopœia, National Formulary, eighth edition, and British Pharmacopœia, 1932, and its addenda. Twenty-fourth edition, 1947. Volume II, Parts 6-7: Being commentary on new drugs introduced in fourteenth revision of United States Pharmacopœia, National Formulary, ninth edition, British Pharmacopœia, 1948, as well as new drugs not officially recognized. 1950 edition. [In one volume.] Cloth. $25. Pp. 2057. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1947; 1950. [Volume II also issued separately. Cloth. $5.]

This edition embodies the 1947 edition (edition 24), now termed volume 1. Pages 1928-2057, volume 2, describe 171 new drugs considered official and 88 new nonofficial drugs. The descriptions follow the usual Dispensatory style, i. e., they give official, unofficial and trade names; names of manufacturers or distributors; chemical formulas; accounts of the discovery and methods of manufacture; tests and standards; pharmacologic properties; therapeutic uses; toxicology, and dosage. Volume 2 is indexed separately. This review is based on the copy containing volumes 1 and 2 in one binding, but for those who already own volume 1, volume 2 has been published separately.

Emergencies in Medical Practice. Edited by C. Allan Birch, M.D., F.R.C.P., Physician, Chase Farm Hospital, Enfield. Second edition. Cloth. $5.50. Pp. 564, with 131 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

This is a practical book providing definite and sound instruction on what to do in medical emergencies. A medical emergency is defined as any condition or circumstance in a patient which requires immediate action other than surgical intervention. The author began to prepare statements on the treatment of urgent illnesses years ago, but in assembling them in book form, he obtained the help of 21 colleagues in the various fields of medicine. What should the physician do, for example, when a needle breaks during an injection? What should be done when the patient collapses under local anesthesia? What should be done when a person is struck by lightning? What action should be taken in cases of embolism, persistent hiccup or shock? Hundreds of other questions are answered in this book. The discussions are short and to the point. The book contains numerous pictures, some of which are in color.

Ophthalmic Operations. By Seymour Philps, F.R.C.S., Surgeon-in-Charge of Eye Department, St. Bartholomew's Hospital, London. Cloth. $9.50. Pp. 397, with 510 illustrations. The Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

The author of this well printed and well illustrated book on eye surgery is surgeon to the Moorfields, Westminster and Central Ophthalmic Hospitals of London in addition to his post at the world famous St. Batholomew's Hospital. He shows that he is worthy of these important posts by the logical thought and lucid writing expressed in his book. Twenty chapters discuss all phases of ophthalmic surgery. Each chapter covers the subject somewhat austerely but remarkably well and with adequate directions in text and illustrations. The surgical judgment expressed is thoroughly sound and leaves little with which to take issue. There are few textbooks of ophthalmic operations available in English, and this is one of the best.

Physiology of the Eye: Clinical Application. By Francis Heed Adler, M.A., M.D., F.A.C.S., William F. Norris and George E. de Schweinitz Professor of Ophthalmology, School of Medicine, University of Pennsylvania, Philadelphia. Cloth. $12. Pp. 709, with 319 illustrations. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1950.

Twenty years ago the author of this new book on ocular physiology published a work entitled "Clinical Physiology of the Eye," which became the standard authoritative reference book on this fundamental phase of ophthalmology. For some years this has been out of print, and there has existed a great need for an up-to-date textbook on the subject. This volume is an entirely new book rather than a revision of the older text. The many advances in the understanding of the processes of ocular functions, especially relating to the formation of aqueous humor, the photochemistry of the retina and the problem of retinal function have necessitated new approaches.

In this monograph there is extensive, authoritative and adequate discussion of all phases of ocular physiology with a thorough analysis of all modern concepts. It would be impossible to give any detailed review of the contents except to point out that the physiological processes of each portion of the eye are systematically described in minutest detail and that no exception can be taken to the factual material presented or theories projected on the basis of present knowledge. The text is well written, printed on a good grade of paper and adequately illustrated.

The author is to be congratulated on having produced a volume greatly needed, which should serve as a textbook for all students of ocular physiology and as an authoritative reference work for all practicing ophthalmologists. While the field of experimental physiology is constantly being enriched by new contributions on basic research, this book, containing fundamental principles, will continue to be valuable for a long period of time.

Progress Volume: Modern Developments in Therapeutics and Methods of Treatment to Accompany an Integrated Practice of Medicine [Volume V]. By Harold Thomas Hyman, M.D. [Including complete indexes, Vols. I-V.] Cloth. $10. Pp. 4133-4867. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1950.

This volume is designed primarily as a supplement to the first four volumes, bringing the text up to date on recent therapeutic measures. In addition to the actual text of this volume, three separate indexes are included: index of therapeutic agents, of clinical syndromes and of differential diagnosis, applicable to all five volumes.

Dr. Hyman has, by categorizing the possible stages of each clinical syndrome, attempted to guide the practitioner from the first visit to the patient to the final cure. Subdivisions include principles of diagnosis and therapy, immediate care, continuing care (favorable course, unfavorable course, progressively unfavorable course), probatory anti-infective therapy and desperation anti-infective therapy. This volume may serve as a "consultant" for the troubled general practitioner, though it should be pointed out that therein lies the danger of substituting the printed word of a textbook for the bedside judgment of an experienced specialist. The coverage of this volume, including discussions of pituitary adrenocorticotropic hormone (ACTH), cortisone, antihistaminics, new anti-infective agents, tetraethylthiuram disulfide (antabuse®), and bishydroxycoumarin (dicumarol®), is excellent and thorough. It will serve best as a catalogue for the general practitioner.

Adler's Place in Psychology. By Lewis Way. Introduction by Alexandra Adler, M.D. Cloth. $4.50. Pp. 334. The Macmillan Company, 60 Fifth Ave., New York 11, 1950.

This book outlines the Adlerian concept of psychology, so-called "individual psychology," which deals primarily with feelings of inferiority and the compensating psychologic mechanisms which are brought into place in automatic attempts toward adjustment.

The author deals particularly with the concept of "organ inferiority" considered as a part of constitutional pathology. Adler's first monograph dealt with inferiority of organs and their psychic compensations. Way includes a critique of psychoanalysis and a comparison of psychoanalysis with the methods and aims of the Adlerian school, indicating that the Freudian answer provides only for a life of regression and repetition, as compared with the life of progress and overcoming, which are interpreted as Adlerian goals.

The author has purposely avoided giving personal details of Dr. Adler's life and his early associations with Freud. He concentrates on a review and evaluation of Adler's theories with special reference to their differentiation from so-called "rival schools." The prime purpose of this seems to have been to clarify Dr. Adler's contribution to the field of present day psychology.

QUERIES AND MINOR NOTES

WHOLESALE USE OF SULFONAMIDES AND ANTIBIOTICS

To the Editor:—*We have had an epidemic of upper respiratory infections clinically resembling influenza. It is generally agreed that chemotherapeutic agents have not altered the course of the illness, but there seems to be a difference of opinion concerning the advisability of their use. I would appreciate an authoritative opinion.*

David Selman, M.D., Spring Valley, N. Y.

Answer.—It is to be suspected that the epidemic of respiratory infection described as resembling influenza was influenza produced by the A' type of virus. This assumption is made because A' influenza virus was isolated from a number of patients suffering from clinical influenza in this country during the first three months of this year. Neither experimental nor clinical tests of the currently used sulfonamides or antibiotics have shown them to have therapeutic worth in the treatment of uncomplicated common colds or influenza. Hence, their use as therapeutic agents in uncomplicated instances of these infections is unsound, unscientific and unwarranted. Such a practice also has the danger of harming the patient by causing a toxic reaction or by sensitizing the patient to the particular agent that is being used and thus possibly depriving him of its benefit at some future time when it might be lifesaving. If definite secondary bacterial complications, such as true bronchitis (not tracheitis or posterior nasopharyngitis), otitis media, sinusitis or pneumonia, develop in the course of a common cold or influenza, then treatment with the desirable sulfonamide or antibiotic is immediately indicated. The wholesale use of sulfonamides or antibiotics in the prophylaxis of the above-named secondary bacterial infections cannot be justified and should not be countenanced by intelligent practitioners of medicine. As is true of all sweeping statements, exceptions may be taken to the one just made. In patients with bronchiectasis, in whom an acute respiratory infection may be followed by an extension of the bronchiectatic lesion, the use of sulfonamides or antibiotics as prophylactic agents is indicated. In patients suffering from myocardial failure, and who have an acute respiratory infection, the same is true, as it is also in persons who are debilitated and in whom the secondary bacterial complications of a common cold or influenza would be of serious import. There are other conditions of disease that fall into the same category as those just mentioned, in which the skilful use of sulfonamides or antibiotics in the prophylaxis of secondary bacterial infections in the course of the common cold or influenza may be very beneficial. But as a general procedure in the treatment of all colds or influenza, the answer is again no.

YOGURT

To the Editor:—*I have had several requests for scientific and accurate evaluation of yogurt as a food. Do you have information on its composition, digestibility and nutritive values?*

Mildred E. Doster, M.D., Denver.

Answer.—Yogurt is a fermented milk. It was developed in ancient times by the people living around the Black Sea and the eastern end of the Mediterranean. In the days before modern sanitation, refrigeration and pasteurization, yogurt making like cheese making, constituted a method of preserving milk. It was called by a variety of names, depending on the country in which it was made. Among the peoples in this country and abroad who have made and eaten yogurt for many years, it is prepared by the transfer of cultures (called starters) from an old batch to fresh milk and incubation until curdling results. Such cultures are seldom pure. In order to supply a safe home method of making yogurt, a bulletin entitled "How to Make Yogurt" was prepared by L. A. Burkey in 1947 and issued by the United States Department of Agriculture. The characteristic organism of yogurt is Lactobacillus bulgaricus, although others may be present. Variations in flavor are due in part to the presence of other micro-organisms.

The milk from which yogurt is made is generally concentrated by boiling or by the addition of milk solids. The amount of lactic acid found is usually greater than that in buttermilk; hence the more sour taste. Yogurt made from equal parts of whole and evaporated milk contains 32 calories per ounce; buttermilk made from skimmed milk contains 11 calories per ounce.

The nutritive value of yogurt is essentially the same as the nutritive value of the milk from which it is made; its virtues are similar if not identical to those of other milks soured with lactobacilli.

L. bulgaricus was isolated by Grigoroff in 1905 from Bulgarian fermented milk. Metchnikoff suggested that L. bulgaricus would be a valuable addition to the intestinal flora, but according to Burrows (Jordan's Textbook of Bacteriology, ed. 14, Philadelphia, Saunders, 1945, p. 484) this organism does not become implanted in the intestine.

For persons who are unable to drink milk, yogurt may be tried, as may also cheese, custard, rennet desserts, skim milk and buttermilk.

The January issue of *Today's Health* has an article (page 31) describing yogurt, its nature, origin and place in the diet.

NATURAL BIRTH CONTROL

To the Editor:—*Is there a possibility of more than one ovum in one month? This is in regard to birth control without jellies, suppositories or sterilization, so-called natural birth control.*

Walter George Eisinger Jr., M.D., Washington, D. C.

Answer.—Most likely there is only one ovum a month in women. From time to time claims have been made that there are two or more ova in one month, but such data have not been verified as normal occurrences. In animals, repeated ovulation can be induced by means of gonadotropic hormones. The same is perhaps true of women, but physiologically there is only one ovum a month. Natural birth control is effective for many women but by no means all. Some women can become pregnant outside of the days that seem to be the proper ones for natural birth control.

BISHYDROXYCOUMARIN AND MYOCARDIAL INFARCTION

To the Editor:—*1. Should every patient with myocardial infarction receive dicumarol® for the rest of his life? 2. What are the dangers in long-continued use of such a drug? 3. In the age period of 50-60, how does the incidence of a recurrence of myocardial infarction within a period of one year compare with the incidence of the first attack in that age period? I would appreciate an early answer.*

M.D., California.

Answer.—1. Not only is it not necessary for patients with myocardial infarction to receive bishydroxycoumarin (dicumarol®) for the rest of their lives, but even for the attack itself there is frequently no need for this drug or any other anticoagulant. A patient in otherwise good health, with a small myocardial infarct and with no evidence of stasis or heart failure does not need anticoagulant therapy. An older patient with a large infarct should be given anticoagulant therapy during hospitalization. In rare cases of myocardial infarction, particularly those with recurrent thromboembolism, long periods of anticoagulant therapy may be wise, provided the patients are under reasonably close observation and have frequent tests to determine the adequacy and extent of the effect of the anticoagulant.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

2. The dangers of long-continued use of such a drug are (*a*) hemorrhage and (*b*) ineffective dosage. The former is a real threat, although the hemorrhages are generally not serious. The latter is a waste of medicine and the cause of a feeling of false security.

3. In the age period of 50-60, recurrence of myocardial infarction is essentially as common as the first attack during that time.

COLORED PERSPIRATION

To the Editor:—*I am 61 years old and in vigorous good health, with only two days' illness in the past 50 years. For 40 years I have had axillary perspiration, varying from salmon pink to brick red, which has defied the treatment of a dermatologist. Thorough washing always has removed the stain on my shirts, but now, with the advent of nylon, I find that no sort of cleansing will remove completely the stain from that material. Have you any suggestions for removal of the cause and the stain?*

M.D., Buenos Aires, Brazil.

Answer.—Staining of clothes can occur in chromidrosis, but this disease is extremely rare. On the other hand, lepothrix is common and is probably the diagnosis in this case. It affects the pubes as well as the axillas, and hairy black tongue has been associated. Fortunately, the diagnosis is readily made by microscopic examination of the hairs for the distinctive granules of micro-organisms. They are visible even with the naked eye, but it is advisable to check under the microscope. They may be black, red or yellow—the latter is the commonest. The coloration is due to colonies of Actinomyces tenuis. A full discussion of the subject appears in Sutton and Sutton's "Diseases of the Skin" (ed. 10, St. Louis, C. V. Mosby Company, 1939, p. 1112).

As to treatment, the skin should be shaved and the sebum removed by benzene or other fat solvent. As a fungicide, sponging with an alcoholic solution of bichloride of mercury, 1:1,000, or of formaldehyde, 1:300, is sometimes efficacious, but recurrences are the rule.

DIGITALIS AND PULMONARY EDEMA

To the Editor:—*Is there any contraindication to digitalis in acute pulmonary edema secondary to acute myocardial infarction? Please outline the management and therapeutics.*

M.D., West Virginia.

Answer.—There is no contraindication to digitalis in the treatment of acute pulmonary edema secondary to acute myocardial infarction. One should treat heart failure in the course of myocardial infarction in the ordinary way, not too strenuously, however, being careful to avoid overdosage of digitalis. For further protection against irritability of the heart, which can come from myocardial infarction as well as from digitalis, it is well to use quinidine sulfate, 0.2 Gm. (3 grains) every four hours for a week or two, during which the treatment of congestive failure is in progress. Low sodium intake, use of mercurial diuretics and complete rest, with the chest up and, if necessary, the feet down, are as important in the treatment as is the use of digitalis. Many lives have been saved by such treatment, although the future of any patient in whom congestive failure develops secondary to acute myocardial infarction is precarious, whether or not digitalis is used. The hazards from the use of digitalis are far fewer than its advantages.

GANGLION IN WRIST

To the Editor:—*Is it possible to have a ganglion beneath the dorsal retinaculum of the wrist that is not palpable or demonstrable and yet is a source of intractable pain with marked loss of grip as well as dorsal and volar flexion, marked tenderness also being present at the level of the retinaculum?*

Leland G. Brown, M.D., Muncie, Ind.

Answer.—It is difficult to believe that a ganglion could cause the symptoms described. It would be unusual for a ganglion to cause severe pain and loss of motor function. The muscles that flex the fingers and draw the hand into dorsal and volar flexion are in the forearm, and there would be no logical reason for thinking that a ganglion could cause weakness of muscles that lie considerably proximalward. A roentgen examination might be helpful, but one would have to consider involvemen of median and ulnar nerves at a considerably higher level, eve as high as the roots of the spinal nerves.

SMALL DOSES OF ESTROGEN

To the Editor:—*A 45 year old white woman had a brea tumor removed. The pathological report showed fibrofatty ti sue in which several cysts were noted. The largest cyst, 2 cm in diameter, was filled with a clear fluid; one small cyst wa filled with a dark bluish fluid. The microscopic examinatio showed the wall of the cyst to be composed of compres connective tissue, in which epithelium was replaced by pre sure atrophy. The diagnosis is cyst of the breast with du papillomatosis. This woman has menopausal symptoms. D you think, I can safely administer estrogenic hormone, or is apt to be cancerigenic?*

M.D., New York.

Answer.—It has not been definitely proved that estroge produce carcinoma of the breast in women. Surely the doses th are administered to overcome distressing menopausal sympto cannot be carcinogenic. It is best to begin with a very small do of oral estrogen. The patient should be warned to take the estr gen for no more than three weeks at a time, then she shou refrain from taking the estrogen for about seven to 10 days an repeat the administration for three weeks again. If she uses th intermittent form of therapy, there need be no concern about b effects on the breast or the uterus.

HYPERTHYROIDISM DURING PREGNANCY

To the Editor:—*A 19 year old white gravida 2, has sym toms of hyperthyroidism clearly dating back four month Her basal metabolic rate at first was + 54 and pulse ra 132. Serum cholesterol was 110 mg. The thyroid gland wa only slightly enlarged, with no evidence of nodules. Wi iodine and supportive therapy her basal metabolic rate fe to + 34 in eight days and she was subjectively much in proved. At present (one week later) she is still receiving iodin and improving. I should appreciate information on prop thiouracil for hyperthyroidism complicated by pregnancy an on the management of such cases in general.*

J. N. Jaeger, M.D., Jackson, Mo.

Answer.—Propylthiouracil is not contraindicated in preg nancy. However, since this patient is improving with iodine ther apy, it is best to continue with this treatment. However, as soon as she escapes from iodine control, treatment with propylthiouracil should be instituted. The response to this drug is usuall good; therefore, there should be no need for surgery during pregnancy. Generally speaking, patients with hyperthyroidism in pregnancy should be treated with propylthiouracil. Iodine usually will compensate the patient only for several weeks, but rarely will it be effective for a period of several months. If there is aggravation of symptoms following delivery, then thyroidectomy is indicated; otherwise not.

CONSTIPATION IN A CHILD

To the Editor:—*A 9 year old patient suffers from constipation. I have used various cathartics with little effect. The feces are round and rocklike in appearance. Enemas have little effect. I would appreciate suggestions.*

M.D., New York.

Answer:—One should first make a complete gastrointestinal survey, particularly from the roentgenologic aspects. It is important that one make motility studies on the small intestine to find out how long it takes for the barium to get into the ascending and transverse colon. After this knowledge has been gained, thorough evacuation followed by a barium enema might be helpful. It is only through these studies that one can begin to evaluate the neurogenic disturbances that lead to the hard stools of which the patient complains.

Hypothetically, if delayed motility of the small intestine and left-sided constipation are present, the patient may be given 3 to 5 mg. of neostigmine, three times a day, or 1 to 2.5 mg. of bethanechol chloride (urecholine®). Further, dehydrocholic acid tablets may be given three times a day to produce choleresis and to make the stool much softer and easier to evacuate.

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NEUROSURGERY IN THE REHABILITATION OF PARAPLEGICS

John D. French, M.D., Van Nuys, Calif.

The aura of hopelessness that pervaded the outlook of the severe neurological cripple in the past has been largely dispelled by rehabilitation advances during recent years. Aphasics and hemiplegics can now be taught to talk and ambulate. Paraplegics and paralytics can be returned to states of comfortable usefulness. These major accomplishments have evolved primarily through the experience accumulated where large numbers of aphasic, hemiplegic and paraplegic patients have been collected. These centers are successful because they can integrate and focus the activities of medical and nonmedical agencies on different aspects of the same problem under the supervision of physicians who have made the study of these conditions their particular interest. The paraplegic patient, almost more than any other, requires such integrated effort. Initially, he is within the province of the neurosurgeon, who evaluates the extent of the injury and does what he can, surgically and otherwise, to facilitate the return of function where damage is not irreversible. Then follows the long and difficult period of rehabilitation during which neurosurgery contributes little, if anything. Later, however, rehabilitation may stop short of the ultimate goal for the patient because of new neurosurgical considerations. Such considerations form the basis for this discussion.

Neurosurgical procedures for consideration at this advanced stage of rehabilitation can be discussed under two headings according to whether an effort is being made to foster return of neural pathways or to destroy such pathways because they conduct impulses deleterious to functional recovery of the individual as a whole. The experiences of such procedures on paraplegics at Birmingham Veterans Administration Hospital, over a period of two years, will serve to indicate the relative frequency with which we have found these operations to be necessary and to indicate the results obtained.

RETURN OF NEURAL PATHWAYS

Delayed exploration of the site of injury is occasionally indicated to certify that all neural pathways not irreversibly traumatized have maximum opportunity for return of function. An unreduced fracture dislocation of the spine, extruded nucleus pulposus or intraspinal hematoma might be corrected, even, possibly, after some months, to the considerable benefit of the patient. Undiagnosed tumors, of course, must be removed. Occasionally, it may be desirable to divide the gross adhesions of a chronic arachnoiditis, particularly when subarachnoid block is present.

In discussion of late laminectomy one must take into consideration the status of the spinal cord before operation. When loss of function is sudden and severe, as in injury, operation must be performed immediately. If loss of function is slowly progressive, as it is in the presence of spinal cord tumor or even, rarely, after trauma, considerably more return of function can be hoped for with late laminectomy.

Our experience with late laminectomy in patients with traumatic paraplegia has not been encouraging from the standpoint of return of spinal cord function. Sixteen such operations have been made without a single observable instance of definite improvement of activity mediated by the spinal cord. There are considerations, however, which make exploration even under such adverse circumstances desirable. Rarely, improvement can occur, particularly when operation is done within weeks or months after injury. Even when the chance of improvement in spinal cord function is remote, release of pressure on nerve roots at the site of injury may eliminate severe local pain or permit return of muscle groups that markedly enhance the patient's sphere of activity.

CASE 1.—A 23 year old man became completely tetraplegic with a level at the fifth cervical vertebra after a diving accident. Laminectomy was performed three months after injury. Subsequently, the patient regained use of his left biceps and triceps and of the right triceps, a recovery that expanded his rehabilitation potentialities immensely.

There are hidden values over and above the admittedly small return from late laminectomy, which frequently make the procedure desirable. The patients accept their condition better after direct verification of the status of the cord has been established. They stop hoping for

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From the Veterans Administration Hospital.

Read in the Symposium on Physical Medicine and Rehabilitation for Paraplegics before the Section on Physical Medicine and Rehabilitation at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 30, 1950.

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

a spontaneous miracle and begin to put more personal effort into rehabilitation. The result is that the patient develops his retained faculties and again assumes his position in society. It is our policy, therefore, to offer late laminectomy to certain patients who have not had previous exploration and who have a spinal subarachnoid block, no contraindications to surgery and a static rehabilitation status. More recent injuries usually receive more favorable consideration, but exploration has been made as late as five years after injury, whenever there was possibility of gain, however slight.

DESTRUCTION OF NEURAL PATHWAYS

The situation in paraplegia frequently belies the adage that "a little function is better than none." When the spinal cord is completely or partially severed, controling impulses from higher centers are disturbed, frequently leaving the patient with untenable reflex or static mechanisms that, in themselves, not only serve no useful purpose but also seriously detract from the rehabilitation goal. The commonest symptoms of this nature that require attention are spasm, pain and autonomic instability.

Spasticity.—Reflex or persistent spasticity can be so severe that the patient not only becomes bedridden but also cannot be treated for bed sores, spastic bladder, contractures and other resulting conditions that, in themselves, can be handled relatively easily. Frequently this spasticity can be alleviated by various nonsurgical measures that should always be tried first. When the condition is intractable, however, surgical interruption of pathways carrying these undesirable impulses should be accomplished. Such interruption can be carried out best at the level of the peripheral nerve or nerve roots.

For persistent spasm of the lower extremities in adduction and flexion, a modified Stoffel operation (obturator neurectomy) can be done. It has been found necessary to do adductor myotomy, also, in addition to the neurectomy, because of secondary fibrotic contracture of the involved muscles.

CASE 2.—A 27 year old man with von Recklinghausen's disease developed a spastic tetraplegia as the result of a cervical neurofibroma with associated arachnoiditis. His condition was unrelieved by two local operations, and he was confined to bed because of the spastic position of his legs. An obturator neurectomy and adductor myotomy were done, after which the patient could ambulate in a wheel chair. It was then possible to institute rehabilitation procedures and to expand his level of social contact to the point at which existence then became tenable for him.

Procedures more generally satisfactory in our experience are those directed against the nerves or roots within the spinal canal. The simplest of these procedures is the injection of 5 to 15 cc. of absolute alcohol into the lumbar cistern, as advocated by Sheldon and Bors. When there is complete paralysis of the pelvis and the lower extremities, rehabilitation procedures can be started. The release from spasm may not be permanent owing to regeneration of peripheral nerves, but the injection can be repeated. During the past two years, 18 patients have received alcohol injection. All injections were successful in that spasticity was relieved. All patients were advised before injection that potency, if it had been retained, would now be lost.

CASE 3.—A 44 year old man suffered a clinically incomple but functionally complete paraplegia as a result of a fractu at the third dorsal vertebra level sustained in an automobil accident. Sensation was partially retained, but motion was lo below this level, and the patient developed severe spasticity his legs. He left the hospital against advice, in 1949, for mani ulative treatment elsewhere but returned a few months lat markedly debilitated, a litter case, with large decubitus ulce in both trochanteric areas and an infected, spastic bladder. H legs were very spastic, being drawn up on his abdomen so th he had to lie on his side. Treatment was impossible in such ci cumstances. Fifteen cubic centimeters of absolute alcohol wa injected into the lumbar cistern at the level of the fourth lu bar vertebra, and the lower extremities immediately beca flaccid. It was then possible to build him up, treat his b sores and bladder and to reinstitute rehabilitation.

When the spinal cord lesion is incomplete, it m be advisable to preserve sensation in patients with e cessive spasticity. Anterior rhizotomy is the procedu of choice in these cases. Two patients have received th operation with satisfactory results for both. In o patient an anterior and posterior rhizotomy was nece sary because subarachnoid block due to adhesions ma alcohol injection impossible.

Pain.—The mechanism whereby paraplegic patien perceive pain in their paralytic extremities is not know The discomfort closely resembles the phantom pa reported by amputees. Patients with such pains, how ever, are seriously handicapped and quite refracto to rehabilitation procedures. Bilateral section of the a terolateral column (spinothalamic tracts) in the thorac spinal cord eliminates this pain in most cases. Sevente such operations have been done with satisfactory r sults in all cases. The level of hypalgesia obtained m be adequate (at least to the level of the tenth dors vertebra) or failure will result. We have had to reope ate on two patients (one twice) before relief was accon plished. There were no complications following th procedures.

CASE 4.—A 30 year old man became paraplegic after inju at the level of the second lumbar vertebra by a shell fragmen Rehabilitation was never satisfactory because the patient com plained of pain in both legs. He was admitted to the hospita three years later, where he made no effort to enter into th usual activities of rehabilitation, apparently being confined b the discomfort. A chordotomy was done two years later afte which complete relief of pain was reported. The patient wa subsequently discharged from the hospital and now indicate that he leads a normal, comfortable existence.

Abnormal Autonomic Reflexes.—Occasionally, pa tients with high thoracic or cervical lesions will manife severe elevations of blood pressure associated with pro fuse diaphoresis, headaches, and, infrequently, cerebro vascular accidents. This reflex appears to be associate on the afferent side with bladder disorders and can b quite incapacitating or even dangerous if not checked Posterior rhizotomy to the tenth dorsal vertebra wil relieve the condition. Two such procedures were fol lowed with satisfactory results.

CASE 5.—After a 30 year old man was wounded in th neck, he had a clinically complete spinal cord transection a the eighth cervical vertebra. Soon after injury, he had an ex ploratory laminectomy and a suprapubic cystotomy. Subse quently, he was sufficiently rehabilitated to be discharged fron the hospital as a wheel chair patient able to maintain reason able self care. During his convalescence, however, he devel oped episodes of severe headache, sweating and chills whe his catheter became plugged or when it was changed at weekly intervals. These episodes were so severe that it was necessary for him to be under constant medical supervision. He reentered the hospital three years later, when it was found that his blood pressure became elevated to 220/115 during these episodes and that, following the attack, the patient would be confined to bed for 24 hours or more. For this reason, a posterior rhizotomy was done from the tenth dorsal vertebra, caudad, two years later. Subsequently, the attacks were completely eliminated and the patient was able to expand his activities considerably.

Other Procedures.—Pudendal neurectomy has been described by Bors for use in certain instances when bladder function is inadequate because of spastic urinary sphincters. He has done pudendal neurectomy in 11 cases, with excellent results. The patients are able to void on strain or pressure and the bladder resumes balance compatible with good function.

Case 6.—A 27 year old man was struck in the back by shrapnel and immediately became paraplegic below the tenth dorsal vertebra. Rehabilitation progressed satisfactorily until he developed frequent bouts of urinary infection and was found to have a large residual that resection did not relieve. A bilateral pudendal neurectomy was done five years later. Satisfactory bladder evacuation resulted, and the patient was discharged to return to school after two months. He has not had recurrence of urinary difficulties since.

COMMENT

Patients who are candidates for these operative procedures are selected at regular paraplegic-neurosurgical conferences held once a week. These conferences provide close contact for the neurosurgeon not only with the patients but also with the paraplegia staff, and decisions regarding rehabilitation procedures of mutual concern are tremendously facilitated by this means. The problems and failures of neurosurgical intervention in this field would multiply significantly if the impressions of the paraplegia and rehabilitation personnel, achieved only by constant observation of the patients, were not available to the surgeon.

During the two year period covered by this review, approximately 500 patients have been studied and treated by the paraplegia service at the Veterans Administration Hospital of Van Nuys. Of these, 77 required neurosurgical operation during convalescence because of a static or regressive rehabilitation status due to one or more of the conditions enumerated above. It is concluded, therefore, that at least one out of every five or six paraplegic patients requires intervention of this nature and that the results of these procedures in carefully selected cases amply justifies their use.

SUMMARY

Neurosurgical procedures applicable to the rehabilitation of paraplegic patients are described and discussed.

Over a period of two years, operations performed in a total of 76 patients were late laminectomy, 16; subarachnoid alcohol injection, 18; rhizotomy, 4; neurectomy, 21, and chordotomy, 17. There were no fatalities.

UROLOGICAL ASPECTS OF REHABILITATION IN SPINAL CORD INJURIES

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The goal of rehabilitation of the paraplegic patient is threefold: medical, physical and vocational-industrial. The urological part of the medical rehabilitation and physical rehabilitation must start as a synchronized effort immediately after the injury.

In World War I only 20 per cent of the spinal cord casualties reached the United States, while 80 per cent died overseas. This ratio was dramatically reversed in World War II, with a survival rate of 80 to 88 per cent of the returning soldiers.[1] Table 1 illustrates the high mortality from genitourinary causes in World War I as contrasted with the low incidence of genitourinary deaths in World War II. This progress must be attributed to the improved understanding of the pathophysiology of the neurogenic bladder and its associated complications and to the advent of sulfonamide drugs and antibiotics.

BLADDER PHYSIOLOGY

The function of the bladder consists in storage and elimination. Elimination starts when the intravesical pressure surpasses the threshold to which the bladder muscle stretches and consists in a coordinated or balanced contraction of the forces of expulsion and relaxation of the forces of retention, culminating in complete emptying of the contents of the normal bladder. This balance is disturbed in the neurogenic bladder at some time or other, resulting in incomplete emptying and can be expressed as a percentage of the ratio residual capacity. The forces of explusion consist of the smooth detrusor urinae muscle (innervated by the parasympathetic, nervi erigentes or pelvic nerves from the second to the fourth sacral) the striated abdominal muscles (from the fifth to the twelfth thoracic nerves) and the diaphragm (phrenic nerve, from the third to the fifth cervical nerves). The forces of retention consist of the smooth muscles of the vesical neck (sympathetic hypogastric nerves from the first to the second lumbar) and the striated muscles of the pelvic floor (somatic pudendal nerves from the second to fourth sacral), which intertwine in part. The spinal

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Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of his own study and *do not* necessarily reflect the opinion or policy of the Veterans Administration.

[1] (*a*) Thompson-Walker, J., quoted by Prather, G. C.: Urological Aspects of Spinal Cord Injuries, Springfield, Illinois, Charles C Thomas, Publisher, 1949. (*b*) Vellacott, P. N., and Webb-Johnson, A. E., quoted by Prather, G. C.: Urological Aspects of Spinal Cord Injuries, Springfield, Ill., Charles C Thomas, Publisher, 1949. (*c*) Raines, S. L., quoted by Prather, G. C.: Urological Aspects of Spinal Cord Injuries, Springfield, Ill., Charles C Thomas, Publisher, 1949. (*d*) Petroff, B. P., quoted by Prather, G. C.: Urological Aspects of Spinal Cord Injuries, Springfield, Ill., Charles C Thomas, Publisher, 1949. (*e*) Prather, G. C.: Spinal Cord Injuries: Care of the Bladder, J. Urol. 57: 15, 1947.

autonomic facilitative centers of micturition are situated at the same sacral levels at which the somatic lower motor neurons of inhibition originate. Neurogenic bladders resulting from lesions above the conus differ functionally from those with lesions at or below the conus.

CLASSIFICATION

Based upon the term of balance and the involvement of the somatic neurons, a simple classification offers itself [1] that is reflected in table 2. Whereas micturition occurs reflexly in the more ideal situation following upper motor neuron lesion, it is initiated by strain in a case of lower motor neuron lesion. Physical rehabilitation must be directed in these latter cases toward early retraining of the abdominal and diaphragmatic musculature. However, the abdominal pressure will even precipitate the reflex voiding contraction of the detrusor urinae in some patients with upper motor neuron lesions.

EXAMINATION

A complete examination,[2] necessary for proper classification, consists of the neurological part, i. e., determination of the level and extent of lesion and of the activity of the conus by testing the bulbocavernosus and anal reflex, and the urologic part, i.e., cystoscopy, urography, sphincterometry, cystometry and determination of balance. All these examinations must be done. No one of them is adequate of itself. The results determine the future management.

ROUTINE MANAGEMENT

Many contributions [3] of the past decade have enhanced our knowledge of the traumatic cord bladder and its management. The following routine has been accepted for peacetime injuries: prevention of retention by introduction of a Foley bag catheter no. 16 to 18. Cystostomy is rarely indicated, either by organic urethral obstruction or by nursing problems in quadriplegics. Tidal irrigation is started with saline or boric acid solution or with solution M [4] in the absence of vesicoureteral reflux, as determined by cystography. Constant surveillance of bladder function by urologic examinations at bimonthly intervals is necessary, and Munro's bladder training is applied at the first signs of recovery of tone.

If balanced bladder function fails to return within three to six months, the causes of failure must be analyzed and corrected. Severe infection must be treated. Increased physical activity and ambulation are encouraged. The further management of dysfunction depends on the classification. In patients with upper motor neuron lesions and conus activity, pudendal nerve anesthesia,[5] pudendal neurectomy, transurethral resection or a combination of these methods are indicated. Patients with lower motor neuron lesions and inactivity of the conus are best suited for transurethral resection.

PUDENDAL NERVE OPERATIONS

The rationale of pudendal operations is based upon the knowledge of the intertwining smooth and striated muscle fibers at the vesical neck [6] and upon the dual innervation of the vesical neck by the presacral nerve [7] and the pudendal nerve.[8a] Experience with pudendal nerve anesthesia is presented in table 3. Permanent restoration of bladder function was achieved in 44 per cent of 107 traumatic, but in only 8.7 per cent of 23 patients with nontraumatic, cord lesions. The bladder neck opened in 44.8 per cent of the patients having traumatic lesions, but only in 21.7 per cent of those having nontraumatic lesions. The reason for this different response is not clear, but the incompleteness of nontraumatic lesions may be responsible. Temporary restoration of bladder balance was achieved in 65.2 per cent of the patients with nontraumatic lesions. A combination of small transurethral resections with subsequent pudendal blocks was equally beneficial in the majority of the small number of patients in either classification. Those who respond temporarily to repeated pudendal nerve anesthesia can be subjected successfully to pudendal neurectomy.[8] Experience thus demonstrates that neurogenic vesical dysfunction of long standing can be successfully attacked through the somatic innervation of the pelvic floor, which plays an important part in micturition.[9]

TABLE 1.—*Mortality from G.U. Causes*

Author	No. of Patients	Period of Observation	No. of Deaths
World War I			
Thompson-Walker [1a]	..	2 mo.	47%
Vellacott and Webb-Johnson [1b]	..	1 mo.	10%
World War II			
Raines [1c]	100	Several months	0 (0%)
Petroff [1d]	70	1 yr. and more	1 (1.4%)
Prather [1e]	69	1½ yr.	1 (1.45%)
V. A. Hospital, Van Nuys, Calif.	623	4 yr.	6 (0.97%)

OTHER NEURECTOMIES

Other neurectomies are of more historical and theoretical interest: presacral neurectomy,[7] resection of the anterior roots of the third sacral nerve [10] or denervation the bladder by the cutting of the anterior and posterior ots of the second, third and fourth sacral nerve.[11] The jective of the latter procedure can be attained more nply by a subarachnoid alcohol block.

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[2] Bors, E.: Spinal Cord Injuries, United States Veterans Admin. Tech. Bull. TB10-503, Dec. 15, 1948.

[3] These bibliographic references are omitted from THE JOURNAL because of lack of space but are included in the author's reprints.

[4] Solution "M" has the following constituents: citric acid monohydrate, 32.25 Gm.; sodium carbonate, 8.84 Gm.; anhydrous magnesium oxide, 3.84 Gm., and sterile distilled water to make 1,000 cc. It differs from solution "G" in that it contains 8.84 Gm. of sodium carbonate instead of 4.37 Gm. of sodium bicarbonate. It is less irritating, less solvent and less acid. It is used in dissolving stones in the bladder or renal pelvis by continuous irrigation.

[5] (*a*) Bors, E.: Presented before the Conference on Transverse Myelitis, Hammond General Hospital, Ninth Service Command, Army Service Forces, United States War Department, Modesto, Calif., June 24-25, 1945. (*b*) Huggins, C.; Walker, A. E., and Noonan, W. J.: Sympathetic and Pudendal Neurectomy for Vesical Atony, J. Urol. **41**:696, 1939. (*c*) Emmett and others.[3j]

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SUBARACHNOID ALCOHOL BLOCK

The subarachnoid injection of absolute alcohol[12] was vised to abolish skeletal spasticity; it has been efficient, so, in supressing pathological autonomic reflexes from stention of the bladder[13] in some cases.[3c] Table 4 emonstrates that 67.4 per cent of 43 patients with aumatic cord lesions regained good bladder function fter there was acute conversion of an upper to a lower otor neuron lesion by the alcohol injection; of these, 8.6 per cent required additional transurethral resections. the six patients who remained on intraurethral catheter rainage had consented to transurethral resection, the ercentage of good bladder function could have been raised still more. Some of the cystostomies were left in quadriplegic patients for nursing care. Spinal anesthesia prior to the alcohol injection has aided in the correct prognosis of future bladder function in more than two thirds of the cases. If the vesical neck does not open during spinal anesthesia, a structural obstruction is present that will necessitate transurethral resection.

TRANSURETHRAL RESECTION

Transurethral resection of the vesical neck is an efficient method and popular among urologists. Table 5 presents a survey of its use and shows that it was applied in from 0.8 per cent to 57.4 per cent of the cases. Large surveys from Veterans Administration Hospitals demonstrate that the method was used in from 11.4 per cent to 20.4 per cent of the cases. Among the 623 cases of our own series, 71 patients (11.4 per cent) were treated by transurethral resection (table 6). Resection was necessary somewhat more frequently in wartime injuries (13 per cent) than in peacetime injuries (9.3 per cent); this may be the result of the prompt care and lowered rate of complicating factors, in peacetime, such as decubitus ulcers, severe urinary infections and cystostomies. The over-all percentage of good results of transurethral resections was high (95.8 per cent), thanks to auxiliary methods of pudendal anesthesia, pudendal neurectomy and alcohol block, all of which contributed 32.3 per cent to the success. Resection is efficacious in upper and lower motor neuron lesions. A so-called late resection was done on 51 patients (71.8 per cent), whose bladders recuperated and retained a good function for a period of four months to seven years, after which the function retrogressed. This demonstrates the instability of the function of the cord bladder, known to be upset by any intercurrent complication. Early and late hemorrhages are frequent complications of transurethral resection. Occasionally, the operation has to be done in several stages. Resection of the entire internal vesical orifice extending to the external sphincter has been recommended, and even partial resection of the external sphincter has been done.[3b] My associates at the hospital and I confined our resections to little more than tenotomies of the posterior lip and lateral folds, removing small amounts of tissue, inasmuch as the prostate is rather atrophic in the majority of patients with spinal cord injury. Resection is indicated when the conservative methods fail. Early resection, within the first three to four months after injury, was done,[3f,i] though it may have been avoidable in some of the cases.

TABLE 2.—*Classification Chart*

	Complete		Incomplete	
	Balanced	Imbalanced	Balanced	Imbalanced
Above Conus (Second to Fourth Sacral Vertebra) Somatic Upper Motor Neuron Lesion	Residual: 0-20% Capacity: 300 cc. Micturition: 1. Desire: absent 2. Initiation: reflex, spontaneous or conditioned 3. Inhibition: none or paradoxical Synonyms: 1. Automatic Bladder 2. Neurogenic Reflex Bladder 3. Normal Cord Bladder	Residual: 20% — 1. Flaccid (Atonic-Munro) Capacity 400 cc. a) Initial stage b) Late regression 2. Autonomous (Munro) Capacity 150-250 cc. 3. Spastic (hypertonic, Munro) Capacity 150 cc. or less	Residual: 0-10% Capacity: 200-300 cc. Micturition: 1. Desire: present 2. Initiation: precipitate 3. Inhibition: inadequate Synonym: 1. Uninhibited neurogenic bladder	Residual: 10% — Capacity: 200-1,000 cc. and more
At or Below Conus (Second to Fourth Sacral Vertebra) Somatic Lower Motor Neuron Lesion	Residual: 0-10% Capacity: 400 cc.— Micturition: 1. Desire: absent 2. Initiation: strain, reflex rarely sufficient 3. Inhibition: passive Synonyms: 1. Autonomous bladder 2. Automatic bladder	Residual: 10% — Capacity: 400 cc.—	Residual: 0-10% Capacity: 300-400 cc. Micturition: 1. Desire: present 2. Initiation: strained or normal 3. Inhibition: active but inadequate	Residual: 10% — Capacity: 600 cc. — Sensation absent (tabetic & diabetic bladder)

COMPLICATIONS

Calculosis.—Infection, stasis and hypercalcinuria[14] play an important part in the development of urinary calculi and must be fought from the start. Sulfa drugs and antibiotics, change of position, elevation of the head of the bed to enhance dependent drainage, high fluid intake to keep the calcium concentration per volume low despite hypercalcinuria [15] are early preventive measures. The best prophylaxis remains early ambulation,[16] which produces bone matrix by pressure, thus allowing deposition of calcium and providing optimal drainage of the kidneys in the upright position.[17] Osteoporosis is diminished and hypercalcinuria drops with weight bearing.[16] The management of renal or ureteral calculi should be conservative during the preambulatory phase, and surgery should be delayed until the patient becomes ambulatory. Surgery may, however, become vitally indicated even during the preambulatory period when conservative means fail to relieve urinary blockage. Bladder stones are treated by crushing or, in rare cases, by dissolution, without regard to the ambulatory or nonambulatory status of the patient. Table 7 demonstrates the incidence of renal calculi, which ranges from 10.9 per cent to 20 per cent. Munro's figure of 1.2 per cent for his series of civilian patients is exceptionally low. Vesical calculi occurred in from 15 per cent to 70 per cent, again with the exception of Munro's low civilian figure of 3.2 per cent.[3] Table 8 analyzes 623 cases and demonstrates a lower incidence of renal calculi of 4.8 per cent in peacetime injuries as compared with 15.5 per cent wartime injuries. The reverse is true for the figures on bladder calculi, which increased from 29.0 per cent in wartime injuries to 40.8 per cent in peacetime injuries. The explanation for this increase may be twofold: (1) every calcareous deposition around a Foley bag catheter was counted as calculus even if its removal was possible by simple irrigation without crushing; (2) the suprapubic catheters, used during the war, were of a larger caliber that allowed this calcareous detritus to escape without being observed.

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TABLE 3.—*Results of Pudendal Nerve Anesthesia*

	Cases	
	No.	%
Traumatic		
Total	107	....
Bladder function restored	47	44
Bladder neck opened	48	44.8
Nontraumatic		
Total	23	....
Bladder function restored		
Permanently	2	8.7
Temporarily	15	65.2
Not at all	6	26.1
Vesical neck		
Opened	5	21.7
Unchanged	17	73.9
Closed	1	4.4

Response of Vesical Neck to Transurethral Resection in 12 Cases

Traumatic	8	Nontraumatic	4
Good response	7	Good response	3
Poor response	1	Poor response	1

TABLE 4.—*Subarachnoid Alcohol Block in 44 Cases*

	Traumatic Cord Lesions: 43	Nontraumatic Cord Lesions: 1
Good Bladder Function		
Without transurethral resection:	21 (48.8%)	..
With transurethral resection:	8 (18.6%)	1
	29 (67.4%)	Total 30 (68%)
Patients on intraurethral catheter drainage		6
Cystostomies		8
		Total 44

TABLE 5.—*Use of Transurethral Resection*

Author		Total No. of Patients	No. of Resected Patients
Bumpus, Nourse and Thompson [3f] (1947)		101	58 (57.4%)
Munro [3g] (1948)	(soldiers)	100	9 (9.0%)
	(civilians)	252	2 (0.8%)
V. A. Hospital, Richmond, Va.[3e] (1950)		280	57 (20.4%)
V. A. Hospital, Van Nuys, Calif. (1950)		623	71 (11.4%)
Bors, Canada & U. S. A.[3a] (1948)		1,586	237 (14.9%)
Malament & Bunts, V. A. Hospitals,[3e] U. S. A. (1950)		1,659	154 (9.3%)

TABLE 6.—*Transurethral Resection Performed on 71 Patients*

	Number of Cases	Patients Having Transurethral Resection
Wartime injuries	354	46 (13%)
Peacetime injuries	269	25 (9.3%)
Total	623	71 (11.4%)
Results		
Successes		68 (95.8%)
Failures		3 (4.2%)
Successful Auxiliary Methods		
Pudendal nerve anesthesia		11
Pudendal neurectomy		2
Subarachnoid alcohol block		9
Total		22 (32.3%)
Level of Lesion		
Upper motor neuron (1 failure)		50 (70.4%)
Lower motor neuron (2 failures)		21 (29.6%)
Late Transurethral Resection		
Shortest interval of good bladder function		4 mo.
Longest interval of good bladder function		7 yr.

TABLE 7.—*Incidence of Calculosis*

Author	No. of Cases	Total Per Cent	Vesical	Renal
Bumpus, Nourse and Thompson, U. S. A.[3f]	101	68.7%	49.9%	18.8%
Petroff, B. P.: U. S.A., J.A.M.A. 129:154 (Sept. 8) 1945	40	......	70.0%	......
	43	......	......	18.6%
Munro, U. S. A.[3g]	100 (soldiers)	29.0%	15.0%	14.0%
	252 (civilians)	4.4%	3.2%	1.2%
V. A. Hospital, Van Nuys, Calif.	623	45.7%	34.8%	10.9%
Botterell, E. H., and Jousse, A. T.: Treat.Serv.Bull. 3:11, 1948, Canada	178	33.7%	......	......
Donovan, H.: Lancet 1:515, 1947, Great Britain	...	......	......	20.0%
Riches, E. W.: Brit. J. Surg. 31:135, 1943, Great Britain	...	20.0%	......	......

TABLE 8.—*Calculosis*

	No. of Cases	Renal Calculi	Vesical Calculi
Wartime injuries	354	55 (15.5%)	103 (29.0%)
Peacetime injuries	269	13 (4.8%)	110 (40.8%)
Total	623	68 (10.9%)	213 (34.2%)

TABLE 9.—*Epididymitis*

	No. of Cases	Epididymitis	Intra-urethral	Suprapubic	Automatic
War	354	88 (24.8%)	57 (16.1%)	9 (2.5%)	22 (6.2%)
Peace	269	61 (22.7%)	31 (11.5%)	1 (.4%)	29 (10.8%)
Total	623	149 (23.9%)	88 (14%)	10 (1.6%)	51 (8.2%)
		Penoscrotal Fistula			
War	354	11 (3.1%)	....	....	....
Peace	269	32 (11.9%)	....	....	....
Total	623	43 (6.9%)	....	....	....
		Penoscrotal Diverticulum			
	165	80 (48.4%)	....	....	....

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Epididymitis.—The incidence of epididymitis was 23.9 per cent, as illustrated in table 9. For obvious reasons it is highest with intraurethral catheters (14 per cent) and lowest when the infected urine is diverted from the prostatic urethra by cystostomy (1.6 per cent). There was a 10.8 per cent increase of epididymitis with automatic bladders in peacetime as compared with the 6.2 per cent increase in wartime. This could be explained in two ways: (1) Early mobilization of the patient in peacetime exposes his gonads to earlier trauma, unnoticed by him because of absence of sensation [18]; (2) Epididymitis often occurs shortly after the intraurethral catheter is removed; its occurrence is then attributed to an automatic bladder, when the true cause was in all probability the intraurethral catheter. Frequent change of catheters, the use of penicillin KY jelly [19] as a lubricant, instruction of the patient on how to avoid trauma, and his wearing a suspensory are means of prevention.

Urethral Pathology.—Urethral fistula subsequent to periurethral abscess at the penoscrotal junction occurred in 6.9 per cent of 623 cases (table 9). Among 165 routine urethrograms, urethral diverticula were found at the same site in 48.4 per cent, varying in their size from 1 to 4 or more cm. in diameter (table 9). Both lesions probably have a common cause in a pressure ulcer that develops at the acute angle of the pendulous urethra.[20] The use of catheters of small calibers and the early restoration of bladder function are means of prevention. Among 40 patients with penoscrotal fistula, 35 per cent were healed spontaneously by conservative means, 7.5 per cent by palliative measures and 57.5 per cent by radical surgery.[21] Diverticula of small size without signs of back pressure are not attacked surgically, while large and infected sacs must be excised. Surgery ought to be delayed until an automatic bladder is present.[20] An attempt to repair either condition without diversion of the urinary stream is justified. In the event of failure, diversion of the urinary stream is necessary. In this case, diversion of the urinary stream by perineal urethrostomy is preferred to cystostomy at the time of the second intervention.[21]

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RECONSTRUCTIVE SURGERY IN SPINAL CORD INJURIES

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Decubitus ulcers are a frequent complication of spinal cord injuries. Their prevention and cure by conservative means has been a major objective of physical medicine.

The incidence of ulcers in wartime injuries amounted to 95 per cent,[1] while in peacetime it dropped to 28 per cent.[2] Considering the short time required to produce an ulcer [3] and the importance of nursing care,[4] the difference of ulcer incidence in war and peace is not surprising. Theoretically, the incidence should drop to zero if patients with spinal cord injuries were immediately admitted to centers adequately equipped for this care.

ETIOLOGY

There are two schools of thought regarding etiology. The first, represented by Brown-Séquard (cited by Gibbon [5]) believes that pressure is the sole cause of an ulcer. This opinion is widely shared.[6] Charcot, on the other hand, favors the atrophic theory. A compromise between the two theories is proposed in Munro's [2] suggestion of a disturbance of autonomic reflexes of the skin during the period of spinal shock. However, no disturbance of circulation was observed locally,[7] nor was a difference demonstrable in the circulation of the skin above and below the lesion.[3] General factors such as anemia, hypoproteinemia, recurrent infections and exhaustion are essential for the development of an ulcer [8] to such a degree that an ulcer can be considered as one of the signs that reflect the general condition of the patient.[7] No racial difference [9] in the development of ulcers was observed in this series.

LOCALIZATION

All prominences of the body exposed to pressure are potential sites of ulcer formation. In order of frequency they are the sacrum, trochanter, ischium, heel and toe. Less frequent sites are the malleolus, iliac crest and spine, patella, head of the fibula and spine of the vertebra. Rarely, ulcers occur above the level of the cord lesion on such sites as the occiput, ear, nose or scapula.

CLASSIFICATIONS

Ulcers can be classified (1) according to the time of their appearance, (2) according to their pathology, (3) according to their clinical significance and (4) according to the bacteriological flora.

"Early" ulcers are distinguished from "late" ulcers [10] in that they appear immediately after the injury for which the patient is confined to bed. They are located on the sacrum, trochanter, knee, heel, iliac portion of the spine or the malleolus. "Late" ulcers appear several months after the injury, when the patient becomes active

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[1] Comarr, A. E.: Management of Decubitus Ulcers on Paraplegic Service, presented before Staff Meeting, Birmingham Veterans Administration Hospital, May 12, 1948; Insulin and Weight Gain in Paraplegia, Ann. West. Med. & Surg. 3: 153, 1949; Management of Decubitus Ulcers in Paraplegia, ibid 3: 235, 1949; Ischial Decubitus Ulcer with Atypical Features, J. Internat. Coll. Surgeons 13: 233, 1950.

in a wheel chair; the localization is then in the ischium. However, any ulcer that appears after a sore-free interval is called a late ulcer, regardless of its precipitating cause. Ulcers of a mummified type, with an eschar-like black crust are distinguished from the gangrenous type. The former are demarcated and have a tendency to heal beneath the eschar; the latter require more surgical care. Superficial ulcers are differentiated from deep ulcers because of the clinical significance in respect to the surgical care required by the latter group. A multitude of micro-organisms has been described, most of which appear in the feces and in the urine of these patients.[11] The latter classification has not proved to be of practical value.

PREVENTION

Prevention of decubitus ulcer is its best cure.[12] Averting pressure by frequent turning of the patient,[13] the use of Stryker frames [14] and care of the skin are essential. Padding with various types of "doughnuts" and airfoam rubber mattresses [15] is an additional protective measure. Sawdust beds or vibrating beds [16] will rarely be necessary. Proper instruction to the wheel chair patient is indicated on how to relieve the ischiac tuberosities from weight bearing and how to avoid trauma [17] during the transfer to and from wheel chairs. It is self evident that the patient's general health must be kept at its best if ulcers are to be prevented.[18] Despite indoctrination of patients and repeated warnings, decubitus ulcers occur because of the lack of cooperation that is consistent with the known mental reaction of paraplegic patients.[19] Early ambulation is one important means of prevention, with corrective physical rehabilitation playing an important part in keeping the general condition of health at optimum level.

TREATMENT

This can be divided into general and local measures; the latter can further be subdivided into conservative and surgical.

The general measures consist of correction of anemia and hypoproteinemia by transfusions of blood and irradiated plasma, correction of anorexia by insulin,[2] reduction of urinary infection and reduction of spasticity. The latter is initially in the domain of physical medicine because it is accomplished by the institution of muscle fatigue by heat, hydrotherapy, electric stimulation or ambulation.

The local conservative treatment is divided according to the appearance of the ulcer. Superficial ulcers are treated by ultraviolet radiation or exposure to the sun wherever climatic conditions are favorable. The progress can be checked by Newman's "tracing device."[21] Various ointments such as cod liver oil compounds [22] or chlorophyll preparations [23] have proved helpful. Blood cell gel has been recommended.[24] Deep necrotic ulcers require débridement and moist dressings with saline solution, diluted sodium hypochlorite (modified Dakin's) solution or bacitracin. This is achieved most easily by irrigations through fixed tubes. Submersion in brine tanks of 7.5 per cent salt solution has proved beneficial. Once granulation has started, the application of various compounds such as nitrafurazone (furacin®),[25] tyrothricine,[8] bacitracin, penicillin jelly,[26] sulfa compounds [27] and sugar [28] is justified. No effort has been made in this series to direct the therapy specifically against micro-organisms; the nonspecific measures have been found practical.[29]

The surgical management consists of palliative and radical methods.

To the palliative procedures belong the skin grafts, such as pinch grafts, Thiersch grafts [30] and buried epidermis grafts.[31] The latter method was used in 250 instances during the past four years. The objective of buried grafts is twofold: They are used to provide definitive closure of small superficial ulcers and to prevent further loss of protein from the granulation tissue prior to radical surgery. This graft can be used at any site, with the exception of the ischium, where it is impractical. Its advantage over inlay grafts consists in its resistance to infection, in the unimportance of immobilization of the patient and in the economy of its use. The donor area need not exceed 6 to 8 per cent of the defective area in order to yield a sufficient number of seeds. Epithelization is complete before shrinkage of granulations occurs.[32]

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14. *United States War Department Technical Bulletin.*[4] *Skinner.*[13d] Stryker.[13e]

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The history of radical bedsore surgery can be divided nto the following epochs: (1) that of the extirpation of cars resulting from ulcers in nonparaplegic patients, in 938 [33]; (2) that of the excision, in 1945, of an acute ecubitus ulcer in a patient with a spinal cord injury [34] this was the first attempt to disprove an earlier statement [2] that surgery is contraindicated in this condition); 3) that of plastic closure by flaps [35] and, finally, (4) hat of ostectomy, in 1947 and 1948, in which it was recognized that no stable results can be achieved without eliminating the underlying focus and cause.[36]

Certain principles govern radical surgery of decubitus ulcers. There must not be excessive spasticity. The time of operation is chosen in accordance with the good general condition of the patient and the local appearance of clean granulation rather than by indication of the bacterial count.[37] Preoperatively, penicillin therapy is started 24 hours prior to intervention. Removal of the entire focus is performed, including the bursal sac, diseased osseous tissue and adjoining calcifications.[38] The choice of the skin incision rests with the discretion of the operator. Some [39] prefer rotation flaps, Y-, T- or X-shaped incisions, while in our series elliptical or S-shaped incisions were used most frequently. Electrofulguration for hemostasis was given preference, in our cases, to use of surgical gut or cotton.[5] Adequate drainage is essential. Wire is used for the button retention sutures [40] as well as for the skin sutures [41]; 28 gage stainless steel is used for the former and 32 to 36 gage steel for the latter. Occasionally, two stage procedures, e. g., at the trochanter, are indicated.

The extent of removal of bone depends upon the individual decubitus ulcer. The entire major trochanter is removed in trochanteric decubiti, provided that there is not an associated dislocation at the hip. In this case, resection of the head, neck and major trochanter of the femur is performed just above the line of the minor trochanter, which may occasionally have to be included in the resection. Removal of two thirds of the inferior ramus of the pubis, the ischial tuberosity and parts of the superior ramus of the ischium is performed in ischial ulcers. Sacral decubiti frequently necessitate the removal of the superficial layers of the sacrum and occasionally, the entire coccyx.

Postoperatively, the penicillin therapy is continued for 10 days. Blood transfusions are given as indicated. It is unnecessary to suppress bowel movements, contrary to the statements of others.[42] The first change of dressing is done on the tenth postoperative day, provided that there are no complications. The drains are shortened at the same time and, later, gradually withdrawn. Ambulation is resumed four weeks after repair of trochanteric and sacral ulcers and six weeks after removal of portions of the ischium, as described above. Mild spasticity must be controlled by immobilization through proper splinting, including casts.

RESULTS

The following results have been obtained over a four year period (April 1946 through April 1950):

A. Conservative results

   (1) Surveys taken at various periods show that an average of 59.1 per cent of the total number of ulcers at various sites will heal under conservative measures.

B. Surgical Results

   (1) Ninety-two individual trochanteric ulcers have been operated on 117 times. The average rate of cure is 89.4 per cent.

   (2) Sixty-four individual sacral ulcers have been operated on 77 times. The average rate of cure is 93.4 per cent.

   (3) Sixty-two individual ischial ulcers have been operated on 112 times, with use of a partial bone resection technique. The average rate of cure is 85 per cent.

   (4) Sixty-eight individual operations removing portions of the ischium have been performed. The rate of cure is 100 per cent. Two cases required secondary superficial skin closures.

   (5) The head, neck and trochanter of the femur have been resected in seven individual trochanteric ulcers complicated by dislocation of the hip. The rate of cure was 100 per cent.

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PHYSICAL TREATMENT AND REHABILITATION OF THE PARAPLEGIC PATIENT

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The use of physical agents and rehabilitation techniques is essential in the clinical management of patients with spinal cord lesions. In addition to their therapeutic effect, these agents and techniques are of diagnostic and prognostic value in the long range program of paraplegic care. Briefly, the major objectives of physical medicine and rehabilitation are to evaluate the extent of the disability and its progress under treatment; prevent, minimize or correct deformity; prevent atrophy, deconditioning and loss of mobility; improve motor function; assist in the control of decubitus ulcers and spasticity; teach ambulation, self care and activities essential in daily living and, finally, provide for maximal physical, psychosocial, educational and vocational adjustment of the individual patient.

Extensive experience in the care of the paraplegic patient, gained during and since the recent World War, has indicated the importance of early, individualized and comprehensive physical treatment. Optimal results require that such treatment be adequately supervised and directed by the physician and that it be carefully integrated into the total therapeutic regimen, which must include good medical, urologic, neuropsychiatric and orthopedic care.

PROBLEMS IN THERAPY

Evaluation.—The manual muscle test is used to determine the status of the motor system with respect to muscle strength, coordination and spasticity. It is useful in indicating the level of the lesion, areas for special care, i. e., electrical stimulation, reeducation, bracing, etc., and when done at regular intervals it aids in estimating prognosis and recovery.

The test for factors inherent in daily living[1] is of great significance in evaluating the functional capacity of the total patient and serves as a guide to his progress under treatment. The items of this test are concerned with hand, toilet, self care and traveling activities, the adequate performance of which is one of the major goals of treatment.

Newer electrodiagnostic techniques are of value in diagnosis and prognosis in selected cases, particularly of those patients with cauda equina lesions. The "square wave" is used to determine rheobase, chronaxie, strength duration curves, tetanus ratio and other important criteria of nerve-muscle function. The electromyograph can give much valuable information with regard to "motor unit" activity within individual muscles.

Joint Deformity.—This type of deformity, once developed, can significantly interrupt the therapeutic regimen by preventing adequate nursing care, bracing and ambulation, etc. Proper bed positioning and the early use of passive exercise will do much to minimize or prevent its occurrence. Proper alinement with "neutral" joint positions and daily passive motion (active whenever possible) of all joints through normal range should be instituted as soon as possible after the occurrence of the lesion. Once deformities have developed conservative measures such as passive motion and traction may not be adequate to overcome them, and more extensive orthopedic and surgical measures, including manipulation under anesthesia, wedge casts, tenotomy and capsulotomy and the like, may be required.

Deconditioning.—This process can largely be minimized by keeping normally innervated segments active and mobile. For example, if the upper extremities are not involved, active resistive exercise should be started early, aimed at keeping the shoulder girdle musculature, the triceps and the finger flexors strong, since these groups are essential to future adequate use of crutches in ambulation. General bed and, later, mat conditioning exercises are valuable.

The method of preventing of specific muscle atrophy in areas of disturbed innervation is not completely understood. It is rather generally agreed, however, that as long as some doubt exists as to the irreversible nature of the spinal cord lesion and some hope for return of voluntary function remains, electrical stimulation of flaccid muscle should be continued. Optimal factors have not been established, but, at present, it would seem desirable to use the low ranges (below 60 cycles a second) of the alternating current in daily stimulation attempting to attain maximal "tension" development within the muscles so treated. Stimulation should not accentuate muscle imbalance or increase spasticity, if these are present.

Motor Function.—When this function starts to return, it can be improved by a graded program of reeducational exercise. It may be necessary to start with passive relaxed exercise and to progress as indicated to active assistive, active and, finally, resistive exercise. Normal motor function will also depend upon good joint motion and good vascular supply. The use of passive motion, elevation and massage will prevent venous and lymphatic stasis in the paralyzed limbs and minimize the development of edema. Heating, if used in an attempt to increase arterial blood flow to the part or to relieve pain, must be carefully supervised. Lost or impaired cutaneous sensibility makes the paraplegic susceptible to burns. Heating should preferably be mild and superficial and followed by careful inspection of the skin. Mild luminous heat or various forms of hydrotherapy are tolerated fairly well.

Decubitus Ulcers.—These are a vexing problem, especially in the patient with flaccid paraplegia, and may develop in spite of good care. Many factors must be stressed in their prevention, including adequate nursing and skin care, avoidance of prolonged pressure areas,

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dequate physical "activity," with its vascular response, nd adequate diet, particularly with regard to protein ntake. Once decubitus ulcers have developed, physical neasures may aid in their "conservation" control. hese measures include "activity," mild superficial heatng, i. e., luminous, infrared, or hydrotherapy, followed y local ultraviolet irradiation of the atrophic area.

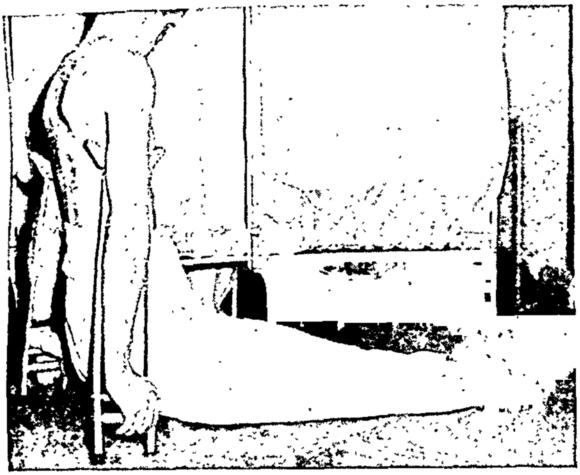

Fig. 1.—Mat exercise with "sawed-off" crutches.

Spasticity.—This may also interfere with good nursing care, bracing and ambulation, and hence its control is essential. Many techniques, medical and surgical, have been advocated in this regard. Here, again, physical measures may be of value. Lee [2] has recently advocated the use of "tetanizing" low voltage stimulation of the spastic patients, and has reported relief of "spasm" in some cases for many hours. Relaxation can be attained by special "training" or by the use of warm underwater treatment in the Hubbard tank or therapeutic pool. Exercise, whether it be passive or active, should not stimulate sudden stretching and "reflex" responses.[3] In many instances, bracing may be adequate to control mild to moderate spasticity and to permit ambulation. Ambulation can be successfully achieved in the great majority of patients whose lesion level is thoracic or lower. Patients with lesions involving the cervical cord cannot be taught to walk, since muscle groups vital to crutch walking are involved. In general, the higher the lesion, the more trunk instability exists and the more difficult ambulation becomes.The ability to ambulate will vary with several factors other than the level of the lesion.

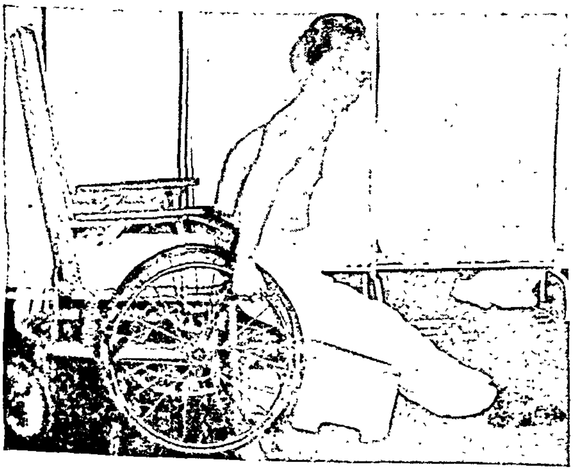

Fig. 2.—Patient moving himself from wheel chair to mat.

Age.—As a rule, the older the patient, the more difficult it becomes to retrain him. Elderly patients have less physical grace, less stamina and less "daring."

General Status.—Intercurrent infections (i. e., decubital and urinary), deconditioning, limitation of joint motion and contractures, and poor mental outlook will adversely affect ambulation.

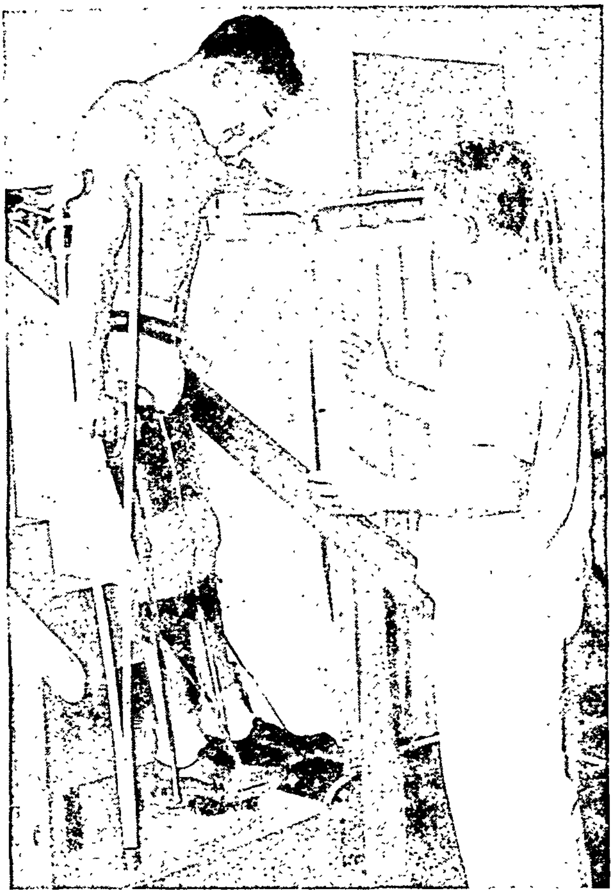

Fig. 3.—Training in stair climbing.

Adequate Bracing.—Adequate bracing is essential. Most patients with a lumbar or cauda equina lesion will not require a pelvic band but may get by with two long leg braces with ischial weight seats. Thoracic lesions, especially the high ones, may necessitate a pelvic band and some, in addition, a special corset or jacket for trunk stability.

Technique.—It is generally wise to start the patient off with mat exercises and sawed-off crutches (fig. 1) to develop the axillary tactile sensations associated with crutch walking. Progress is then made to the standing position with braces and crutches. Balancing in all directions is taught before any attempt is made to walk. Self assurance is vital to the patient. He the learns ambulation, beginning on parallel bars and progressing to crutches. Patients with a lesion below the tenth dorsal vertebra may readily learn a four point alternate gait in addition to a "swinging" gait.

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Training in Self Care and Daily Activities.—This training is ideally started early, while the patient is still in bed. Getting from wheelchair to mat for exercise (fig. 2) must be taught. When ambulation is possible, many items, such as stair climbing (fig. 3) and traveling, are added to the program. The goal of all such training is to achieve maximum self reliance and physical independence. Adapted equipment should be improvised to aid the severely disabled patient to learn as many of these activities as possible.

Total Rehabilitation.—Total rehabilitation of the paraplegic patient must include vocational retraining and job placement. Before this can be achieved, it is essential that early in the course of the illness the physician begin to plan for this eventual goal. Such planning must include adequate evaluation of the physical disability, social environment, psychological factors in the individual in response to his disability and educational and vocational inventories. Then with a realistic approach to the eventual residual disability, a vocational goal can be set. This goal must be consistent with the patient's abilities and disabilities and toward it all therapeutic and retraining activities must be directed.

The physician will find many resources in his own community to assist him in such adequate planning. He must actively accept the responsibility of leadership in this team effort on behalf of the paraplegic patient.

SUMMARY

The major objectives of physical medicine and rehabilitation in the care of the paraplegic patient are presented. Basic principles and techniques in attaining these objectives are briefly discussed.

Successful clinical management requires the early, individualized application of these principles and techniques, which must be integrated into the total therapeutic program.

ABSTRACT OF DISCUSSION

Dr. Louis B. Newman, Hines, Ill.: I do not think we ca find a more outstanding example of teamwork than that whic you have just heard regarding the rehabilitation of patient with spinal cord injuries. Complications such as genitourinar tract infections and stones, decubitus ulcers, spasm, malnutrition, etc., interfere with the rehabilitation of these patients It is extremely important to prevent or correct these conditions. Physical medicine rehabilitation, with its program o activity, including ambulation, tends to lower the incidenc of complications. The healing of decubitus ulcers, the remova of kidney and bladder stones and the clearing up of associate infections, together with obturator nerve neurectomy or eve a rhizotomy, when indicated, for spasm, will help the patien along toward maximum function. Many patients with spina cord lesions, who have been confined to bed with very littl physical activity, were found to have a certain degree o hypoproteinemia with disturbed albumin-globulin ratio. Eve though these patients were given large amounts of protei orally as well as parenterally, it was difficult to secure norma values. With an activity program including ambulation, it wa possible to secure and maintain a normal plasma protein valu with normal albumin-globulin ratio. *In the study of* abou 700 patients with spinal cord injuries, over the past four years at our hospital at Hines, it was observed that, with the clearing up of infections, the elimination of decubitus ulcers and the institution of an intensive physical medicine rehabilitation program including ambulation, spasm decreased in frequency as well as in severity in most cases.

HYPOTHYROIDISM IN CHILDHOOD

ITS GENESIS

William A. Reilly, M.D., Little Rock, Ark.

Even now some writings describe hypothyroidism only in its fully developed forms, i. e., generalized myxedema, great skin dryness, retarded mentality, dwarfism, characteristic facies, marked epiphyseal retardation, constipation, somnolence and a low basal rate.

Marked mental retardation does not inevitably develop. In even the patient with congenital thyroid deficiency this retardation will not always develop if he is treated before the age of 6 to 12 months. Acquired hypothyroidism causes slow mental development; however, about 25 per cent of such patients can again attain normal mentality when treated properly. Dwarfism and epiphyseal retardation require at least one or more years to become definitely manifest. Hypothyroid infants do not usually have a high blood cholesterol level.

These and other marked deficiencies may take years to develop in a given patient. Usually, hypothyroidism starts mildly, progresses slowly and insidiously and persists permanently if untreated. Occasionally, the progression of deficiency is steplike. There can be a remission of the deficiency, but this is rare and usually only partial and temporary. Infections usually speed up the commonly slow progression. Subtotal thyroidectomy, of course, brings on the deficiency quickly.

The genesis of hypothyroidism is governed by various combinations of the following factors: age at onset, response of the various end organs (target tissues) and the degree of the deficiency.

The effect of age at onset is an interesting factor and is illustrated well by the patient with congenital hypothyroidism. In fetal life thyroid cells appear at about the third week and acini and colloid appear at about the thirteenth or fourteenth week; iodine is then first taken up, and, presumably, thyroid substance is elaborated for the proper development of the fetus. This does not occur in

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From the Department of Pediatrics, University of Arkansas School of Medicine.

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yreosis. Nevertheless, if the mother's thyroid is nor- l, which is usually the case during pregnancy, her thy- id substance carries on in her fetus its needed thyroid nction. Such a child, in my experience, is quite normal birth, and not abnormal, as some articles state, in gth, weight and appearance. The manifestations of pothyroidism do not appear until several weeks to sev- al months after birth. Indeed, the appearance may be stponed longer if the baby, while being nursed, obtains ough of the mother's milk, which usually contains her yroid substance.

Some so-called cases of acquired hypothyroidism can e recognized as probable congenital deficiencies if one ealizes the following facts: Only about one sixteenth of e amount of normal gland is necessary for the usual eeds of the body. If a baby is born with a hypoplastic land, just able to carry on normally, great enough resses of infection at any time or the stresses of extra rowth, which occur in the first six months, at about 2 ears and at 5 to 7 years of age and at puberty, can well e too great; the deficiency will then first manifest itself.

The response of the end organs (target tissues) is sig- ificant. Hpyothyroidism can affect all parts of the body. owever, at a given time not all tissues seem to be defi- ient or to react equally to a given lack. Some of these issues, which seemed to be doing normally on a reduced ation of thyroid substance, will at a later time first show eficiency. This may not always be due to a diminished mount of thyroid substance but may well be due to de- creased sensitivity of the end organs, resulting from a ariety of factors. As a matter of fact, myxedema is not lways evident in the early phases of the deficiency. Thus, t may be only internal, around the vocal cords or in the oints, and may not be evident externally on the face. In other patients not much anemia may develop. Rarely there is development of ascites only. Some patients show only menorrhagia as the earliest and sometimes the only manifestation for a long while. Such partial clinical pictures may remain unchanged for months and even years, or, on the other hand, the classic stigmas may suddenly blossom in many parts of the body. Some patients may show a very low basal metabolic rate but little anemia, rise in cholesterol or dwarfism. Progression of the deficiency usually is slow and steady, as stated; in acquired hypothyroidism, the decrement is usually progressive but in rare instances can be sporadic and even cyclic—that is, with periods of remission. Cyclicity can be explained by the presence of only a remnant of gland, which acquires more function temporarily. Recently I examined a boy 4 years old in whom, for 2 years, signs of hypothyroidism had been developing: some myxedema, mental and physical sluggishness, drying of the skin, a high level of cholesterol, a one year retardation of the epiphyseal age, a very low thyroid uptake of I^{131} with high urinary excretion and a definite therapeutic response to thyroid. Within several months his I^{131} uptake was normal. I am certain that at that time his thyroid function was much better than during the time when the I^{131} test showed deficiency. Here, possibly, is remission following relapse; I am not certain yet that he has had permanent remission. I have observed several patients who had temporary hypothyroidism and who then seemed to recover fully. Thus in E. J., an 8 year old girl, for six months the following sequence of events occurred: mental, then physical, sluggishness developed to the point at which school work was quite unsatisfactory; after several months, there appeared definite myxedema of the face only; in the last month, the hair dried a bit and, even though she was in the sun a good deal, vitiligo appeared. Her deficiency had not progressed enough to produce dwarfism. In several trials the basal metabolic rate was always below —20 per cent. The response to thyroid substance was entirely satisfactory—the vitiligo even darkened a bit. After nine months of continued success, therapy was stopped, but no deficiency became evident in the next year. The question arises: Will this deficiency recur later in life during the stresses of infection, puberty, pregnancy or the menopause?

The effect of the degree of thyroid substance deficiency is somewhat more readily understandable. It has already been partially explained. In athyreosis the deficiency is practically total. However, there is always the possibility that some small amount of thyroid tissue is present. My own I^{131} uptake studies indicate this. It is fairly well proved experimentally that some thyroid substance is also formed elsewhere in the body, as suggested by experiments on the thyroidectomized rat. Partial functional deficiency of the gland is occasionally not equal to the extra demand for hormones during stresses of growth or infection. After thyroidectomy, when only 2 to 4 Gm. is left (the normal gland in childhood weighs 10 to 15 Gm.) the deficiency usually is temporary, for this remnant grows probably because of thyrotropic hormone action.

Textbooks do not mention this natural development of hypothyroidism. A somewhat similar genesis occurs in diabetes, hyperthyroidism, Addison's disease, some ovarian deficiencies and in nonendocrine diseases.

SUMMARY

Some writings still describe hypothyroidism in only the fully developed state. It could and can be diagnosed earlier, and often without laboratory aids. The patients with congenital deficiency (athyreosis) usually appear normal at birth because of the help of the maternal hormone; after several weeks or several months the classic picture of hypothyroidism starts to develop. Acquired hypothyroidism usually develops slowly and insidiously for months and even for years before it is fully developed. The genesis is governed by various combinations of the following factors: age at onset, response of the various end organs (target tissues) and degree of hormonal deficiency.

ABSTRACT OF DISCUSSION

DR. HANS LISSER, San Francisco: I am in complete agreement with Dr. Reilly in all his opinions, as they are expressed in this timely paper. I use the word, "timely," because from time to time, it appears advisable to reiterate what Osler, Anders, Plummer and others have stressed during the past 50 years, that childhood and adult myxedema victims make the rounds of several physicians, as a rule, before their affliction is recognized. Fifteen years ago, I wrote, "If this be true for outright myxedema (and it is true), how infinitely more so does it hold true for the more frequent and less characteristic, or partial, forms of the disease, and for the milder grades of hypothyroidism." It was once said with regard to lues, "Know ye syphilis in all its manifestations and ramifications and all other things clinical will be added unto you." This grandiose epigram served a useful purpose, despite its exaggeration. It riveted attention on the marvelous mimicry of this kaleidoscopic infection. Why not paraphrase it for an almost equally meritorious purpose? "Learn ye well all the conspicuous peculiarities but also the capricious vagaries and hidden hints of thyroid failings, and much misery will be spared your patients and much satisfaction added unto you," especially when a simple, potent and inexpensive remedy is at hand.

Dr. A. Wilmot Jacobsen, Buffalo: In my experience, mild temporary or acquired hypothyroidism is very commonly mistakenly diagnosed, and I believe that this is probably truer now than it was when physicians relied on their clinical observations rather than on laboratory tests. Today, the physician suspecting hypothyroidism usually orders basal metabolic rate determinations, gets x-rays of bone and does a blood cholesterol test. If all these are within normal limits, he tends to dismiss the idea of hypothyroidism, not realizing that they are really rather crude techniques that are helpful in verifying the diagnosis in cretinism but not too helpful in the recently acquired cases or in the mild cases. There are probably innumerable children receiving iron tonics, multiple vitamins, liver injection, and whatnot, month after month, who are actually suffering from hypothyroidism and who merely need a little thyroid. Any new tests that will give us help in interpreting thyroid function will be welcome, especially those that can be given in early infancy, the period in which it is most important to make the diagnosis. In this instance the basal metabolic rate is of little or no help. There has not been sufficient time for the bones to show definite retardation, and even in complete athyreosis the cholesterol level may be normal. The protein iodine of the serum may be helpful eventually, but this determination is not available in most clinics. The uptake of radioactive iodine, as used by Dr. Reilly, has received much attention lately and may prove to be our most valuable test; however, the technical difficulties of these iodine analyses are great because of the small amounts encountered, namely, only 1 to 30 micrograms per 100 cc. of plasma as compared, for example, to 15,000 to 800,000 micrograms of urea or glucose. But which of all the tests is the best index to thyroid function it is idle to say, as has been point out by Dr. Means, in Boston, because they all test differ aspects. The basal metabolic rate is an index of the impact the thyroid hormone on all the end organs in the body. accuracy will depend both on the amount of hormone in liver and on the sensitivity of the end organs to that hormo The protein-bound iodine serum is an index of the circulat thyroid hormone, and radioactive iodine excretion, indicati as it does, iodine collection, is an expression of the thyroi hunger for iodine. In adults, the combination of the three t can be more helpful to the clinician than any one alone. I sho like to have Dr. Reilly tell us his opinion of the iodine test practical use in the average hospital clinic.

Dr. William A. Reilly: The diagnosis of hypothyroid must be made early in the disease. I think that if any of us in patients the marked hypothyroidism that is described cretinism in the average textbooks, we would not overlook It should be detected early, as has been driven into everybo ears for so many years. In the early stages, I do not think can rely too much on any one test. There are, after all, m laboratory tests. The physician has to take a careful hist do a good physical examination and then resort, if necess to whatever laboratory facilities he has in his area. Regarding iodine tests, if Dr. Jacobsen had in mind the protein-bo iodine, it is just too difficult to do unless the technician is ac tomed to it. We cannot always rely on low uptake of iodin the thyroid gland and excess output of urine as pathognom only of hypothyroidism. We find it to some extent in other c ditions. After you have taken your history, physical findi and some laboratory tests and you are still in doubt, the th peutic test with the thyroid substances is very helpful. But me caution you again: Everybody who responds to thyroid d not have hypothyroidism per se. For instance, when thy extract makes someone lose weight, it may do so not because need for thyroid substance but because of the calorigenic ef of thyroid substance.

INTESTINAL OBSTRUCTION IN THE NEWBORN AND THE INFANT

DIAGNOSIS AND SURGICAL MANAGEMENT

Oswald S. Wyatt, M.D., Minneapolis

The past decade has brought rapid strides and real progress in the recognition of intestinal obstruction in the newborn. Surgical intervention, instituted at the proper time, is saving more of these babies every year. Not only has our diagnostic ability been stepped up, but we have also been greatly benefited by the splendid progress that is being made in pediatric roentgenology. The work of Newhauser and Caffey in pioneering the field of pediatric roentgenology is setting a splendid example for all medical schools, and I am sure that a place must be made for such appointments on all our faculties. Pediatric pathology is likewise making rapid strides under Farber and surely, before long, must be integrated into our pathology and pediatric departments.

The gas pattern of the intestinal tract of the full term newborn infant has been studied and plotted, giving us for the first time factual knowledge regarding the x-ray findings in the first few hours of life.

When confronted with a newborn infant who has not passed meconium and is vomiting everything, you must realize at once that you are dealing with some form of intestinal obstruction. A flat plate of the abdomen is order, and a study of the gas pattern will help to locali the obstruction and in many instances aid you in visuali ing the type with which you are dealing.

There are many types of intestinal obstruction in t newborn, but at this time I shall attempt to outline t diagnosis and surgical management of only three the most common conditions that one is called upon treat.

The most frequent type of obstruction met with in t newborn infant is hypertrophic pyloric stenosis. Th congenital anomaly, and surely it must be considered such, usually manifests itself about the second or thi week of life by the onset of vomiting. Occasionally, infant may start to vomit in the first few days or wee of life; this is exceptional, but pyloric pathology must kept in mind. For the first few days the vomiting is n forceful, and no one becomes very concerned. If the ba is on the breast, the feedings are carried on as usual. the feedings are artificial, some juggling usually beg to take place in the formula. A few more days pass a the vomiting becomes projectile in character. This definite cause for alarm and very well should be. Th projectile vomiting usually takes place after every fee ing within an interval of one to 30 minutes. At this peri

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in the disease, the baby is definitely losing weight and the stools and urine have become scanty. After about a week of this, the infant will appear dehydrated. At this point pyloric stenosis should be definitely suspected, the baby hospitalized without further ado, and all responsibility taken away from the mother. This is usually her first-born child, a male, and she becomes panicky.

Hospitalization and a thorough examination, at this time, will reveal a dehydrated infant, below his top weight, with little if any stool, and with scanty, highly colored urine. Observation at feeding time presents projectile vomiting, which is one of the three cardinal diagnostic signs. Visible gastric peristalsis, another of the cardinal diagnostic signs, is easily visualized. After proper sedation the pyloric tumor can be palpated nearly 100 per cent of the time. This is the third cardinal sign. If the tumor is not palpated at once, try before feeding, during feeding or immediately after vomiting. By this routine you will usually discover the acorn-like tumor for which you are searching. Palpation of the tumor is not absolutely essential for the diagnosis. If the history is good, projectile vomiting is present, and there is visible gastric peristalsis, most pediatrists will make the diagnosis. However, the surgeon feels more at ease if he can palpate the tumor before surgical intervention. Unless there is some doubt regarding the diagnosis, x-ray studies are never indicated.

Preoperative preparation of these babies must be carried out in close team play with the pediatrist. I definitely feel that the improved mortality rate in this disease is directly due to the forward strides taken in the preoperative and postoperative care of these sick babies and that the credit must certainly be given to the pediatrists. The thoughtful and careful use of intravenous fluids, blood and plasma has surely saved the lives of many of these babies. I do not think that operative technique has improved much since the days when Downes, Ladd, Bolling and their contemporaries started to perform the Ramstedt operation, but the mortality has definitely and steadily decreased, so that today it should not be over 0.5 to 1 per cent. This state of affairs has been brought about principally by the pediatrists and their teaching.

Ordinarily, it takes about 24 to 48 hours to prepare these babies for surgery. This is never an emergency operation, and you must take sufficient time to make your little patient safe for surgery. It might be wise, while the infant is being readied for surgery, to stop all feedings by mouth and to give fluids and supportive treatment by vein and hypoclysis. With the continuation of feedings, after surgery has been decided upon, I have always been amazed that we have not lost more of these babies from aspiration or pneumonia. If you choose to continue fluids or thick cereal feedings, then it might be advisable to keep the baby on its abdomen in Trendelenburg position. Hemoglobin estimation must be done at once; if it is below 70 per cent a small transfusion is in order. To overcome dehydration, venoclysis or preferably hypoclysis should be started. The amount necessary is determined by the infant's appearance and skin turgor. Usually 125 cc. to 175 cc. morning and evening suffice, the last clysis being given about eight hours before surgery.

Gastric lavage must be done, one to two hours before surgery, until returns are clear. The only preoperative medication necessary is 1:1,200 scopolamine hydrobromide. Be strict about maintenance of body heat preoperatively, during surgery and postoperatively. These infants do not tolerate heat loss. The anaesthetic of choice is still ether by open drop method. Oxygen should be administered through a catheter under the mask while surgery is in progress. Place the baby in slight Trendelenburg position if there is much mucus or danger of aspiration from stomach contents. The operation of choice is still the classic Ramstedt, which should be completed in under 30 minutes, barring unforeseen accidents.

Carry the baby back to the prewarmed crib with his head lowered, and place him in Trendelenburg position, to combat shock and to avert aspiration. If the baby is in extreme shock a few hours after surgery, give a small transfusion of plasma. Hypoclysis may be indicated the first day after surgery, rarely thereafter. Five to 10 cc. of water is given by mouth within a few hours after surgery. Alternate every two hours with 10 cc. breast milk or formula for the first 24 hours. Increase feedings 5 to 10 cc. daily or as rapidly as the baby will tolerate them. The hospital stay is usually about 10 days, the baby being on 3 to 4 ounces (93.3 to 124.4 Gm.) each feeding. With the weight curve rising steadily, the baby is ready to go home. Do not place him in his mother's care until everything is normal, and the mother will be entirely free from worries.

DUODENUM

Duodenal and small bowel obstruction are met with not too infrequently in the newborn. I think that in the past many of these cases have been overlooked, have gone undiagnosed, and that the infants have died after some obscure diagnosis of bowel obstruction. I shall confine these remarks to only the intrinsic types of obstruction, in other words, the atresias and stenoses. In our experience this is the most frequent type of intestinal obstruction that we encounter in the newborn.

The diagnosis is relatively easy and surely should be made in the first 48 hours of life. Given an infant who vomits from the very first feedings and has not passed meconium, I reiterate, you are dealing with some type of intestinal obstruction. If the vomitus is not bile-stained, the obstruction lies above the ampulla of Vater; if bile-stained, it lies below this ampulla. If the obstruction is in the duodenum or upper jejunum, the abdomen does not present much distention, and when present, it is confined to the upper abdomen. If the obstruction is low down in the small bowel, marked distention is usually the case. Tympany and high-pitched, pistol-shot borborygmi are present. If an atresia is present, no meconium shows on the diaper and a rectal swab gives a negative Farber test. If the condition is stenotic in nature, small amounts of meconium are present and Farber's test is positive.

A flat plate of the abdomen will clinch the diagnosis. The gas pattern of the small bowel, large bowel and rectum, in the full term infant, should be visualized within about nine hours after birth. Absence of gas in the colon after nine hours indicates small bowel obstruction. If only the stomach and duodenum are distended and filled with gas, it means you are dealing with a duodenal obstruction. This is a frequent location for an atresia. If stomach, duodenum and a few loops of jejunum are visualized, a jejunal obstruction is revealed. If many loops of small bowel are visualized, this indicates an obstruction in the ileum, the terminal portion being most frequently involved. If you bear in mind the gas pattern of the intestinal tract in the full term newborn infant, the x-ray will not only help make a positive diagnosis, but in most instances will also locate the approximate site of the trouble. Once the diagnosis is established, immediate surgical intervention is mandatory. Remember that the newborn infant presents the best surgical risk within the first 72 hours of life. The state of hydration is still good and the general condition is excellent. On the other hand, I feel that any major surgical procedure in the first 12 hours of life, unless life-saving, is too hazardous for the infant. I believe that the kidneys and lungs of the newborn should be allowed 12 hours of postnatal life to become stabilized. Body heat should be carefully guarded before the baby goes to surgery. An indwelling intravenous catheter should be in place, ready for any emergency. The operative table should be warm and room temperature about 85 F.

For the past several years, Dr. Joseph Baird, of the anesthesia staff of the University of Minnesota, has administered the anaesthetic for all of these infants. At the university, we use cyclopropane supplemented with 1 to 3 minims (0.06 to 0.20 cc.) of curare. In his hands this type of anaesthetic has been highly successful and safe. I feel that the strides made in anaesthesiology in infant surgery, in the past decade, have been truly amazing and deserve a great deal of credit for the results in pediatric surgery that we are all able to achieve. It has permitted us safely to lengthen our operating time, has proved a most important adjunct, and, I am sure, has saved the lives of many of these babies. We have no fear of cyclopropane and curare when they are given to these infants by Dr. Baird or a member of his group. It is very comforting for the surgeon to have such a skilled anaesthetist on his team. The operator is entirely free of anaesthesia worries, and of the necessity for the proper administration of fluids while he is operating.

When the operation is about to start, the intravenous drip is opened, plasma is connected to the line for instant use, and the proper blood must be in the operating room. If shock is anticipated or if the procedure is unduly prolonged, plasma must be given. Blood is not used unless definitely indicated. Be cautious about the administration of intravenous fluids, and do not overtreat the baby. Your little patient is always much safer when underhydrated rather than overhydrated. I am sure that many babies have been drowned by too much intravenous fluid.

The operative procedure consists of anastomosing the distended loop of bowel with the collapsed segment and of establishing continuity around the atretic or stenotic segment or segments. It constitutes a lateral anastomosis done with only one layer of sutures. Be careful, at the angles of the collapsed bowel, that you do not occlude your newly made lumen. Speed without carelessness is essential in operating on these wee ones. Be meticulous about hemostasis and extremely gentle in handling the tissues. Be anticipating shock all the while, and use every means to prevent it. Adrenal cortex extract is given during surgery and repeated every four hours for the next 48 hours. Postoperatively, all fluids are given intravenously until peristalsis is heard, then mouth feedings are started on a pyloric schedule. Usually the babies require hypoclysis daily for the first week. If the hemoglobin drops below 70 per cent, give a small transfusion. Again, I emphasize, do not give any intravenous fluids that are not absolutely indicated. If the baby becomes distended, institute nasoduodenal suction to prevent too severe postoperative distention and to protect your anastomosis. The oxygen tent is a valuable adjunct if distention becomes severe.

To get these babies well every detail must be supervised with the utmost care. The operative time must be properly chosen, the anesthetist and the choice of anesthesia must be of the best available in your community, and the postoperative care must be carried out in close cooperation with the pediatrist.

INTUSSUSCEPTION

After the first few weeks of life, acute intussusception is the most frequent type of intestinal obstruction encountered during infancy. To me, intussusception has always been an intriguing problem, and I am ever amazed at some of the variations it may present. Sometimes when one least expects it, it will be present, and again, when one is fairly sure of the diagnosis, it is absent. Why it is not suspected in the early hours of the disease and why immediate steps are not taken to prove or disprove it is difficult to understand. This condition, I think, presents the gravest tragedy that can happen within the abdomen of the healthy, well nourished infant, and it behooves every physician to substantiate or rule out the disease once suspicion is aroused. Too frequently the diagnosis is made late, or not at all, and what should have been a simple surgical cure is converted into a catastrophe.

There is nothing very difficult about the diagnosis of intussusception in infancy if we will take time to listen to the history and make a thorough physical examination. What are we in such a hurry about when every hour is so important to this sick baby? In many instances, it is a telephone diagnosis, if you will listen to the little mother tell her story. Any infant who has passed blood and mucus by bowel must be seen by the physician within the hour, and for one of us to give the mother an assuring answer or prescribe a palliative procedure over the telephone is pure neglect and abuse of our obligations and responsibilities. The infant, particularly under 1 year of age, who is stricken with intermittent abdominal pain should be suspected of having intussusception and be investigated at once. The onset may be violent, striking like a "bolt out of the blue," it may be of moderate severity or even mild in nature. Frequently, the mother will compare the attacks with labor pains. If the onset is violent, you are dealing with a tight intussusception and the severity of the attack will produce shock in the baby. If the pain is moderate to mild in nature, no shock will be present. I think that most of our textbooks should be revised regarding their remarks on shock in intussusception in infancy. Fully 50 per cent of babies with intussusception do not present shock. The wee one may vomit with the first attacks of pain, but vomiting is not an early symptom in acute intussusception. Abbott, Sedgewick and Rodda, who did some of the early studies on intussusception, felt that assumption of the knee-chest position during an attack of pain was almost pathognomonic for enterocolic intussusception. A normal bowel movement early in the disease should not deceive you; it is merely an evacuation of the rectum resulting from violent peristalsis. Within a few hours blood and mucus will be passed by rectum, the so-called "red-currant jelly" stool. Rarely does this appear in under six hours.

With such a history abdominal examination will usually reveal a mass. If any question arises regarding the mass, administer chloral hydrate by rectum, have the baby asleep, and carry out a thorough abdominal palpation. This procedure will usually elicit the presence of the abdominal tumor. Given this triad of intermittent abdominal pain, blood and mucus by bowel, and a palpable abdominal tumor, the physician can make confident diagnosis of intussusception. If, by any chance, there is still a question regarding the diagnosis, a barium sulfate enema can be administered by experienced and skilful hands. The argument as to whether a barium sulfate enema is justified for diagnostic or therapeutic purposes still goes on. I am sure all of us have seen intussusceptions, in the first few hours, that have been successfully and safely reduced with a barium enema. Likewise, we have seen intussusceptions that have become spontaneously reduced. Now, the dangers of such a procedure must be kept in mind. They are: incomplete reduction, injury to the appendix and its blood supply, and rupture of the gut. With this in mind, I question whether a barium enema should ever be used as a therapeutic agent if the onset was violent, if the baby is in shock or if blood has been passed by rectum. I can see no objection to its being used as a diagnostic measure, even after blood has been passed, if there is any doubt regarding the diagnosis. Then, if the diagnosis is established, surgical intervention should be executed at once.

The preoperative preparation of a baby about to be operated on for acute intussusception must be done with the utmost care. A thorough gastric lavage must be done, and an indwelling gastric catheter must be in place before the baby goes to the operating room. Shock, if present, must be treated, and an intravenous catheter must be in place and functioning properly. A dextrose drip must be working, with plasma connected up, and with blood available. Plasma will usually suffice to combat the operative shock, but if much blood has been lost, whole blood must be given. With the extremities wrapped in sheet wadding to conserve body heat, and with a room temperature of 85 F., the baby is ready for the operation.

With the baby placed in slight Trendelenburg position and under ether anaesthesia, by open mask, a long right rectus incision will give the proper exposure for at least 90 per cent of all intussusceptions, which are enterocolic in type. When the peritoneal cavity is opened, free straw colored fluid is usually encountered. Locate the mass at once and bring it into the operative field under direct vision. I think it unwise to attempt blind reduction, for fear of rupturing the bowel and losing the baby because of peritonitis. Once the mass is in the hands of the operator and the extent of the intussusception is visualized, reduction is started. With one hand on the entering bowel and the other at the head of the intussusception, execute reduction by pressure on the head and the most gentle traction on the entering bowel. If the neck is extremely tight, a hemostat may be inserted along the side of the intussuscipiens and gently spread to dilate the neck. Once the reduction starts, it will progress smoothly until the head reaches the neck; then, if the remaining mass is gently squeezed with a warm pack, satisfactory reduction can be completed. Inspect the junction of the terminal ileum and cecum closely to make sure that reduction is complete. Search for a Meckel's diverticulum, which may have started the intussusception, and if it is found, remove it. If the appendix has been caught in the intussusception, remove it. Perhaps more frequently than we realize, appendiceal involvement may initiate an intussusception. The thickened, leather-like feeling of the terminal ileum is merely due to hypertrophied lymphoid tissue; do not open the bowel and expect to find polyps. Terminate your procedure as quickly as possible, with meticulous closure of the abdominal wall. Carry the baby back to his crib with his head down, place him in Trendelenburg position, and tie all four extremities.

If the bowel has been opened for any reason or the appendix removed, give antibiotics for the first 72 to 96 hours postoperatively. Hypoclysis is necessary for the first 24 hours and water by mouth thereafter. Feedings may be started the third postoperative day if tolerated. Administer vitamin C for the first week postoperatively to assure better wound healing. Keep the baby flat on its back for 10 days to prevent possible evisceration.

In closing, may I again emphasize the importance of a careful history, early examination and diagnosis, followed by immediate reduction. I am confident that by these methods the mortality of acute intussusception in infancy will be markedly reduced throughout the nation.

63 S. 9th Street.

ABSTRACT OF DISCUSSION

Dr. Clifford D. Benson, Detroit: I agree that if morbidity and mortality rates in this type of obstruction are to be further reduced, the most important factors are early surgical diagnosis and early surgical treatment. In evaluating the improved results of the surgical management of various types of obstruction in the intestinal tract of the newborn and infant, we must give credit to a better understanding of the fluid requirements of these patients and also to the cooperation of the pediatricians and the house officers who did a great deal of the work in meeting these fluid requirements. I do not believe that surgery of the newborn can be carried out successfully without this cooperation because to meet these preoperative and postoperative requirements of care requires time and patience. At the Children's Hospital of Michigan during a seven year period, there were 400 infants admitted to the hospital with a diagnosis of intestinal obstruction; 50 per cent had obstruction due to pyloric stenosis, 16 per cent had either atretic or stenotic lesions of the gastrointestinal tract, and 20 per cent were classified as having intussusception. During the past 10 years, on the surgical service at Children's Hospital of Michigan and on the private service at Harper Hospital, 401 infants have been operated on for pyloric stenosis, with three deaths, or a mortality rate of 0.74 per cent. Some of these infants started vomiting as early as the third or fourth day of life. This is unusual, as it is usually the second or third week when they develop projectile vomiting.

We have also seen infants come to operation at the end of the third month; the oldest child on whom we operated for pyloric stenosis was 5 months old and had been vomiting for one month. From the findings at performance of the Fredet-Ramstedt operation, there can be hardly any doubt, as far as the surgeon is concerned, that this is a mechanical type of obstruction. I feel that those patients who have been treated medically and who have recovered did not have a true pyloric stenosis but had pylorospasm. The results are so good today from the Fredet-Ramstedt operation and the morbidity and mortality rate so low that it does not seem justifiable to keep these babies, except for a limited time, under medical management. If they do not respond to thick feedings, atropine and sedatives, they should be prepared for the Fredet-Ramstedt operation. In regard to obstructive intrinsic lesions of the duodenum of the newborn, they are either complete or incomplete. It is important to distinguish between these two, not only from the standpoint of the urgency of the operation but also in regard to the use of barium. We never use barium when we have made a diagnosis of atresia of the duodenum, but in stenosis, in which there is a small opening and some gas and fluid go through, one can safely use barium in localizing the site of obstruction. Acute intussusception is still the most common abdominal catastrophe of an obstructive nature that can occur in the infant. With early diagnosis and surgical reduction within the first 24 hours, the mortality is low; but with each hour above 24, the mortality increases. I have always felt that the location of the mass is no definite criterion of the severity of the lesion. As Chaffin has emphasized, the important factor is whether it is a constricting or nonconstricting type of intussusception. No doubt many of the early intussusceptions, within the first 12 hours, can be reduced by a barium enema, provided that they are of the ileocecal or colic-colic type. If the barium reduction is to be done, it should be done in the hospital under the complete supervision of the surgeon and the roentgenologist, and the child should remain in the hospital for three or four days while it is ascertained whether the reduction has been successful. I am not in favor of the barium reduction routinely, because many of the intussusceptions will not only be single ileocolic type but may also have an additional ileo-ileo intussusception. Furthermore, there may be lesions causing the intussusception, especially in the older child, such as a polyp or Meckel's diverticulum, that will require surgical therapy. At the Children's Hospital of Michigan and on our private service at Harper Hospital from 1946 to 1949, there were 42 infants with acute intussusception; 34 were under 1 year of age and eight under 2 years of age. Three intussusceptions were reduced by barium enema with no further treatment, and these patients were 1 week, 4 months, and 8 months old. Thirty-four had surgical reduction, with one death, or 2.9 per cent mortality. There were five infants who required intestinal resection and primary anastomosis for irreducible intussusception. One death occurred. The combined mortality rate of barium reduction and surgical treatment for the entire group of 42 infants and children was 4.8 per cent. With early diagnosis, proper preoperative and postoperative care, good anesthesia and gentle and careful surgery, the infant with intestinal obstruction, as discussed by Dr. Wyatt, has an excellent chance of recovery.

Dr. Clifford Sweet, Oakland, Calif.: Dr. Wyatt has called our attention to three important causes of intestinal obstruction in infants. Anyone can use Dr. Wyatt's paper as a text and save the lives of nearly every one of these infants, unless he sees the child too late after the original golden opportunity has passed. Any baby should be operated on as soon as he is in condition, since he cannot be maintained indefinitely on parenteral fluids alone and, if allowed to pass the peak, may lack the ability to come up a second time. I should like to ask Dr. Wyatt and all others to stop speaking of the "gas pattern" of the intestinal tract and use the more accurate term "air pattern." The pattern is formed by swallowed air from which oxygen is absorbed, leaving the nitrogen behind, and is not the result of some mysterious gas-forming machinery within the intestinal tract. When all teachers of medicine stop making this error the misnomer "colic" will all but disappear. The projectile vomiting does not take place after every feeding. On the contrary, it may at first occur only once or twice daily. Late in the disease, after t stomach has become dilated it may retain two or more feedin before it disgorges itself. Projectile vomiting may begin at bir with no deformity present in the intestines except congenit hypertrophic stenosis of the pylorus. I have twice operated su cessfully on babies born prematurely at seven months. In o of these operations, done under local anesthesia, the baby w eviscerated. Since then I have not used local anesthesia. Usua projectile vomiting begins about the end of the second week o life, as Dr. Wyatt pointed out, and this fact causes those no familiar with the condition to miss this diagnosis more oft than any other. I have never found it necessary to give a ba a sedative in order to feel the pyloric tumor. If the baby i taking a feeding at the time of palpation, and if his physic is standing at his head and steadily and gently lowers his fin into the baby's abdominal wall, he will feel the tumor if i present. He can readily feel the contracted stomach through t infant's abdominal wall and, following its outline with his fin tip, can be literally led directly to the tumor, which otherwi might be missed because of variation in its surface relationshi I do not agree with Dr. Wyatt on postoperative feeding infants with pyloric stenosis. I have followed the teaching Faber and Chandler, who demonstrated by x-ray studies t nothing leaves the stomach for 24 hours after operation. I g the baby nothing by mouth for 24 hours and maintain him balance with parenteral fluids. Then I give him one, two three ounces (31.1, 62.2 or 93.3 Gm.) of breast milk or form every four hours in the daytime and allow him to wake up f feedings during the night. By the morning of the fourth po operative day he is ready to go home; I have sent the baby w is still on the breast home the day after operation. I do n emphasize the importance of keeping these babies as warm Dr. Wyatt does. The likelihood of shock is increased by the a plication of too much external heat. The Children's Memor Hospital in Chicago found that keeping the patient cooled to rectal temperature of 98 F. during surgery is advantageous, e pecially during the summer months. I would emphasize t importance of never forgetting the possibility of intussusceptio During the early hours of an intussusception, before blee has taken place, I have reduced it with a barium enema and h then not operated on the patient. I have not always removed t appendix. In some cases the appendix was so edematous and far advanced toward gangrene that it seemed inadvisable to r move it. So far I have had no cause for regret. I do not lea the child in the hospital as long as Dr. Wyatt does, and I do n believe that keeping the child flat on his back for 10 days has a influence on possible evisceration. I should like to suggest t transverse abdominal incision through one or both rectus a dominal muscles, at any level, which affords easy access to t intussusscepted mass and is far superior to the longitudinal on It affords perfect exposure and heals so rapidly that the dang of evisceration is practically nonexistent.

Dr. Oswald S. Wyatt: Dr. Sweet brought up the matt of intestinal obstruction. Sometimes, instead of using a th barium mixture—and, if you are going to use barium, it must very thin—we use lipiodol.® It is a little more expensive, but feel it is safer. Barium, of course, must never be given by mou if you suspect atresia or complete obstruction, not the strangu tion type of obstruction. The gas pattern, as Dr. Sweet brin out, is rather interesting. I think our feeding schedules va somewhat. Dr. Sweet's is just as good as mine. Other men use slightly different type. I do not think we should be too fus about what kind of feeding schedule we are going to put t babies on. I think that sometimes we make a mistake by turni the baby over to the mother too early. So often, it is the fir born child. I feel the mothers are much happier if their babi do not go home until everything is well under control. Remo of the appendix, when we are dealing with an intussusceptio can be done much more readily, I think, these days simply b cause of the antibiotics and drugs we are using. It was also t advice of my teachers that when we did an intussusception, must never remove the appendix. That was quite true in tho days because we did not have the antibiotics and the drugs, a too frequently we lost a baby from peritonitis. We do not fe that these days.

TRACHEOTOMY FOR PREVENTION OF PULMONARY COMPLICATIONS IN POSTOPERATIVE AND SEVERELY DEBILITATED PATIENTS

Joseph P. Atkins, M.D., Philadelphia

Pulmonary complications in the postoperative patient may be divided into two groups: those resulting from emboli and those produced by bronchial obstruction. This paper is concerned with the control of obstructive pulmonary lesions by tracheotomy in patients whose recovery is threatened by a respiratory complication that fails to respond to the ordinary measures for its prevention and control. Obstructive pulmonary complications produce two physiological disturbances: (1) the systemic, which is concerned with the problem of asphyxia,[1] and (2) the local, which is concerned with atelectasis or its sequelae—pneumonitis, drowned lung and lung abscess. The asphyxial state can be caused by sudden obstruction, because of occlusion of the upper airway or aspiration of massive quantities of vomitus. It can also occur in atelectasis as a result of reduction in the ventilatory surface of the lung. In the latter case the onset is insidious and the degree of anoxic injury difficult to appreciate. Anoxic injury to the central nervous system is well understood. The studies of Morrison [2] have demonstrated the permanent changes that occur in the central nervous system after short periods of anoxia. Galloway [3] has shown how damage to the lung occurs as a result of anoxic injury and makes the patient more susceptible to atelectasis and its sequelae. The two problems are therefore interrelated.

Tracheotomy has long been recognized as a safe and effective method of preventing asphyxia due to high obstructive lesions of the airway. What has not been generally recognized is that the threat of obstruction in the upper airway is an equally important indication for tracheotomy. It is only common prudence to prevent these anoxic episodes whenever their occurrence can be reasonably predicted. In extensive operations about the mouth, pharynx or neck there is danger from obstruction by edema, by interstitial hemorrhage and by inability to prevent the entrance of pharyngeal secretion or food into the lung. If an adequate airway is guaranteed, an easy access for aspiration of the tracheobronchial tree is established by tracheotomy, the patient is protected both from anoxic episodes and from aspiration pneumonitis. The additional operative intervention of tracheotomy is a negligible factor in comparison with the safety it affords.

The threat of obstruction can also be recognized in certain medical diseases, notably the convulsions of tetanus and encephalitis. This was forcefully demonstrated in the case that follows.

REPORT OF CASES

Case 1.—A 5 year old boy was admitted to the hospital with mild tetanus. He was seen on the eleventh day of the disease. His symptoms were subsiding, and although he had mild attacks of laryngospasm with his seizures he had never shown signs of asphyxia. Tracheotomy was not performed. On the fourteenth day of his illness he suddenly had a single convulsion with severe laryngospasm that caused his death.

It may be difficult to recognize the need for tracheotomy in the very ill postoperative or debilitated patient with high obstruction. Because of weakness or central nervous system depression these patients are unable to respond with the vigorous respiratory effort usually seen in acute respiratory obstruction. The tendency of the observer is to believe that the obstruction is less severe than it actually is. For this reason the patient is permitted to suffer from an inadequate airway for a long period of time. The effort of breathing past the obstruction further exhausts the patient; he is unable to cough secretion out of his lungs, and the partial asphyxial state further reduces his ability to react to the hazardous situation.

Case 2.—A 5 year old girl was operated on for relief of an esophagopleuralbronchial fistula due to a lye burn of the esophagus. Intratracheal anesthesia was used during a long and tedious thoracotomy. Eight hours following her operation mild signs of laryngeal edema developed. Direct laryngoscopy revealed fibrinous exudate in the subglottic area. The exudate was removed. This improved the airway, but it still was definitely narrowed. The stridor and indrawing were minimal. She remained restless, could not sleep and had distinct tachycardia. A second laryngoscopy eight hours later revealed reaccumulation of the subglottic exudate and accumulation of obstructive secretion in the trachea. A bronchoscope was inserted to relieve her obstruction. After an orderly tracheotomy she went to sleep, the pulse slowed, and her subsequent recovery was uneventful.

Failure to recognize the seriousness of that obstruction would have exposed the patient to the danger of sudden death by asphyxia or atelectasis as a result of the accumulation of obstructive secretion in the lung.

High obstructive lesions threaten life by asphyxiation. In a less obvious manner they threaten the lung by producing pulmonary congestion and interfering with effective cough. In contrast to this, low obstruction threatens the lung primarily. By reducing the ventilatory area of the lung, low obstruction carries also the threat of asphyxia.

Low obstructive lesions have two etiological components: (1) accumulation of secretions in the tracheobronchial tree and (2) failure of the expulsive powers of the lung to dislodge them. Secretion may arise in the lung itself or be aspirated from the pharynx. In the case of vomitus the aspirated material carries not only infection but also chemical irritants. Impairment of the expulsive mechanism is particularly relevant to this discussion. In this connection, we are not so much concerned with the loss of expulsive power due to anesthesia or opiates,

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From the Broncho-esophagologic Clinic of the Hospital of the University of Pennsylvania.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

[1] Gray, J. S.: The Physiology of Respiratory Obstruction, Ann. Otol., Rhin. & Laryng. 59: 72-77, 1950.

[2] Morrison, L.: Histopathologic Effects of Anoxia on the Central Nervous System, Arch. Neurol. & Psychiat. 55: 1-34, 1946.

[3] Galloway, T. C.: Laryngo-Tracheo-Bronchial Obstructions and Their Secondary Effects, Ohio State M. J. 36: 851-854.

which tend to exert a temporary effect, but with the loss that occurs as the result of mechanical failure. This is seen in the emphysematous patient or the patient who does not have the muscular power to produce an effective cough.

The result of the low obstruction is atelectasis or its sequelae—bronchopneumonia, drowned lung or lung abscess. The literature contains many studies of this problem, particularly as it concerns postoperative atelectasis and bronchopneumonia. The paper by Haight and Ransom [4] clearly outlines the various factors responsible for the development of these lesions. Dripps and Deming [5] have shown how the development of atelectasis and bronchopneumonia can be reduced by proper care of the postoperative patient. At the University of Pennsylvania proper care includes at least the following: careful anesthesia, with restoration of the cough reflex at the earliest possible moment; hyperventilation, particularly in the early postanesthetic period; frequent turning; encouragement of coughing; early ambulation; prophylactic antibiotic therapy, and removal of accumulated secretions by bronchoscope or catheter aspiration.

There is no doubt that careful enforcement of such a regimen will protect most patients. However, this regimen becomes difficult to enforce if the patient cannot cough effectively, if weakness or paralysis prevents ambulation or if secretions are constantly being aspirated into the lung. In these circumstances the use of frequent catheter and repeated bronchoscopic aspiration may be necessary to keep the lungs clear enough to maintain satisfactory oxygenation. When this condition is of long duration, they become impractical. The care that is required of the nursing and medical personnel is often not available. In these circumstances tracheotomy simplifies the care of the patient by providing easy access to the tracheobronchial tree for aspiration, while it guarantees an unobstructed airway.

There are many circumstances in which tracheotomy can save life by protecting mechanically impaired respiratory function in the very weak patient. Priest, Boies and Goltz [6] and others [7] have shown how tracheotomy may be applied to the care of bulbar poliomyelitis. Bofenkamp and Priest [8] have used it in the management of botulism. We have found it to be particularly useful in postoperative neurosurgical patients in whom pulmonary complications constitute one of the most formidable problems. This is a group in which cerebral anoxia is particularly to be avoided. Our experience with these patients has been summarized by my colleagues, Taylor and Austin.[9] Two illustrative cases will demonstrate the value and effectiveness of tracheotomy in the protection of the lower respiratory tract.

Case 3.—A 73 year old man was admitted to the Hospital of the University of Pennsylvania with progressively deepening stupor. Before a diagnosis could be made a left-sided atelectasis with distinct signs of anoxia developed. He appeared moribund. Bronchoscopic aspiration revealed a tremendous amount of secretion in both lungs. Because of the patient's loss of ability to expel secretions a tracheotomy was done. During subsequent days a profuse bronchorrhea required frequent aspiration through the tracheotomy tube. He survived the pulmonary difficulties. This permitted diagnosis and evacuation of a large subdural hematoma. The patient gradually recovered from his stupor. With the patient's increasing awareness the cough reflex became effective, and the profuse bronchial secretions disappeared. He made a complete neurological recovery and was decannulated before discharge.

The tracheotomy was a lifesaving procedure that maintained life before and after the operation so that specific neurological surgery could effect a cure.

Case 4.—A 57 year old man was admitted to the Hospital of the University of Pennsylvania. He was comatose, had increased intracranial pressure and a respiratory rate of 10. His neurological lesion could not be localized. The bronchi contained very tenacious secretion. To insure an adequate airway a tracheotomy was done. He had no cough reflex. At times his respiratory rate fell as low as 4. Despite this severe respiratory depression, he was maintained by careful nursing, oxygen therapy and, at times, a respirator. He died suddenly one month after tracheotomy.

At autopsy an old hemorrhage into the medulla was observed with a second area of fresh hemorrhage, which caused his death. Despite the fact that this man had lived for one month with minimal protective respiratory reflexes, the lungs were clear. One would expect to find an extensive atelectasis and bronchopneumonia in such a patient. It seems reasonable to believe that the tracheotomy contributed to the integrity of this man's respiratory tract.

It has been our experience that when the cough reflex is abolished it may be impossible to prevent atelectatic and anoxic injury even with tracheotomy. We tracheotomized one patient who had a brain tumor; he died after several weeks of coma with a necrotizing tracheobronchitis and bronchopneumonia. Tracheotomy is not a panacea, but in the majority of cases in which it is indicated it offers a simple and positive means of protecting the respiratory tract.

The patient to whom tracheotomy is offered for the prevention of atelectasis and asphyxia usually has a serious organic disease that may in itself be fatal. The demonstrated ability of tracheotomy to prevent the added burden of a respiratory complication may be the deciding factor in achieving recovery.

The variety of circumstances in which life may be threatened by mechanical impairment of respiratory function makes it necessary for the physician to think not in terms of managing a specific disease but in terms of categorizing this as a state of pathological physiology seen in medical and surgical diseases. The ordinary measures for preventing and treating postoperative pulmonary complications can be applied to the nonoperative patient when comparable problems are encountered. When the ordinary measures fail, tracheotomy offers a safe and usually effective means of preventing atelectatic and asphyxial injuries that may seriously impair recovery.

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[5] Dripps, R. D., and Deming, M. V.: Postoperative Atelectasis and Pneumonia, Ann. Surg. **124**: 94-110, 1946.

[6] Priest, R. E.; Boies, L. R., and Goltz, N. F.: Tracheotomy in Bulbar Poliomyelitis, Ann. Otol., Rhin. & Laryng. **56**: 250-263, 1947.

[7] Grulee, C. G., Jr., and Panos, T. C.: Epidemic Poliomyelitis in Children, Am. J. Dis. Child. **75**: 24-39 (Jan.) 1948. Galloway, T. C.: Bulbar Poliomyelitis, J. A. M. A. **123**: 1906 (Dec. 25) 1943.

[8] Bofenkamp, B., and Priest, R. E.: Tracheotomy in Botulism, Ann. Otol., Rhin. & Laryng. **58**: 1093-1099, 1949.

[9] Taylor, G. W., and Austin, G. M.: Treatment of Pulmonary Complications in Neurosurgical Patients by Tracheotomy, to be published.

SUMMARY AND CONCLUSIONS

Obstruction in the upper or lower airway may threaten life by asphyxiation or by atelectasis and its sequelae.

Tracheotomy can relieve or prevent these injuries.

The indications for tracheotomy may be overlooked in circumstances in which potentially fatal obstruction may occur or when the signs of obstruction are masked by debility.

When routine measures fail to protect the lower respiratory tract because of accumulation of secretion or failure of the expulsive mechanisms, tracheotomy offers a safe and effective method of treatment.

ABSTRACT OF DISCUSSION

Dr. Joel J. Pressman, Beverly Hills, Calif.: Dr. Atkins has stressed the absence of respiratory symptoms resulting from atelectasis, particularly in debilitated and cachectic patients, as well as in those who are semiconscious or unconscious because of either a drug narcosis or a diseased state. The importance of this cannot be overestimated, since I am certain that many more patients are lost because of failure to recognize atelectasis than because of improper treatment. But, what price does the patient pay for the tracheotomy that Dr. Atkins advocates? Undoubtedly he pays something. For example, the cough becomes less effective, since it depends for its effectiveness on the development of a preliminary increase in intrathoracic pressure. This increase occurs as a result of the contraction of the rib cage and the abdominal muscles, but for maximum effect a close laryngeal sphincter is required so that a percentage of this increase is lost when the laryngeal sphincter is rendered noneffective by the use of a tracheotomy tube. But, I wonder whether the forceful cough, deprived the patient by the tracheotomy, is, after all, always an advantage in the type of atelectasis of which Dr. Atkins speaks, or whether under certain conditions forceful cough can be a disadvantage and the tracheotomy, by virtue of lessening its force, prove to be of more value than is ordinarily supposed. For example, in these atelectatic states there is a plug within the lumen of a bronchus, occluding it. Beyond this plug and distal to it in the lung segment that it supplies, the pressure is relatively negative. In the first stage of cough one expands his thoracic cage to take a deep breath and the pressure beyond the plug becomes even more negative. In the next stage of the cough process one forcefully contracts the thoracic cage against the closed laryngeal sphincter, as a result of which intratracheal and intrabronchial pressures increase. This added force is, by the laws of physics, applied equally in all directions, including downward against the plug. In the presence of the relatively negative pressure beyond it and in the face of the increased pressure above it, isn't it at least possible that sometimes the cough does just what one doesn't want it to do, which is to force the plug more deeply into the bronchus? In that case wouldn't one say that it could be advantageous not to have so forceful a cough in the presence of the type of atelectasis under discussion? May not, therefore, the price one has to pay for the tracheotomy tube in the form of a less effective cough be a blessing in disguise and an advantage even apart from the opportunity it gives for aspiration?

The important thing in the treatment of this type of atelectasis is not so much preserving especially forceful cough but instituting measures to get air beyond the plug and convert the minus pressure distal to it to a plus pressure, so that even a feeble cough will force the plug out of the bronchus instead of into it. Of course, the best way is to remove the plug by aspiration. But in obstruction of the smaller distal branches that can't be done. One therefore tries many other measures. Nothing in the treatment is as important as administering CO_2 to the point of marked hyperpnea, not only to an immediate postoperative patient, as Atkins mentioned, but also to all greatly weakened patients until they are completely recovered from their debilitated state. I advocate, not atropine, as is commonly employed to dry secretions, but, quite to the contrary, enormous quantities of potassium iodide, intravenously if necessary to liquefy the secretions so that they can be more readily extruded by even a feeble cough. I believe that when we can do so postural drainage should be maintained in the Trendelenburg position and at least part of the time with the face down to get the advantage of gravity and drainage as is done in bronchiectasis. In these cachectic states in which mucoid material is present bilaterally turning a patient on his side as is conventional seems illogical, since if you contend this helps the uppermost lung to drain, I can with equal reason and logic point out that it also helps the dependent lung to fill, and, even more, it limits its expansion during respiration, creating an ideal condition for the conversion of a unilateral atelectasis into a bilateral one.

Dr. Julius A. Weber, Seattle: Tracheotomy for the prevention of pulmonary complications brings up a controversial subject, one reason being that it is another surgical procedure. This is no objection if it means saving a life. Another reason is that it does hinder the normal ability of the bronchi to clear themselves. However, when a patient is unable for various reasons to exert enough of the positive lung pressure to induce a satisfactory cough, he then needs medical artificial or mechanical aid. If this cannot be maintained or aided by the various known means at hand, including bronchoscopic removal of substances or secretions by means of forceps or suction or by the use of catheter aspiration to the nose or mouth, then in individual psychic cases a tracheotomy may be justifiable. Proper catheter aspiration through the tracheotomy tube can be taught to new, untrained medical personnel quicker and easier than the nasal or oral route. In other words, if all other available methods fail, or if there is some mechanical reason such as some head, nasal or oral operation or ophthalmology, then I believe that tracheotomy is to be considered.

Dr. Joseph P. Atkins, Philadelphia: I want to make it perfectly clear that tracheotomy is never done when the simpler measures referred to in the paper will suffice. When they seem to be failing bronchoscopic aspiration is done early to prevent or relieve a developing atelectasis. When these measures fail tracheotomy is usually done after a bronchoscope has been introduced to guarantee an airway during the procedure. We use a small incision and antibiotic pack, as described by Dr. Gabriel Tucker. This prevents subcutaneous emphysema and wound infection. I agree that there is a loss of the effectiveness of cough produced by the presence of a tracheotomy tube. However, these patients who require tracheotomy already have an ineffective cough. For that reason the tracheotomy is necessary. By this means relatively inexperienced personnel can maintain the integrity of the respiratory tract in a patient with a severely impaired cough mechanism. I thoroughly agree that keeping the respiratory tract functioning actively is the best means of protecting it, whether the patient be tracheotomized or not.

In answer to a question as to the use of wetting agents, my colleagues and I use aqueous penicillin, 5,000 units per cc. When introduced into the tracheobronchial tree it seems more effective than other liquefying agents. We do not know if this represents an antibiotic or mucolytic action of the penicillin. We do know that when penicillin solution is introduced into the tracheobronchial tree the aspiration of viscid secretion is greatly facilitated.

Neurologists Hammond and Mitchell.—The years from 1862 to 1880 may be regarded as the cradling period of American neurology, which was born during the Civil War. Many general practitioners who served in the army medical departments emerged as practicing neurologists. Conspicuous among them was William A. Hammond (1828-1900), who was appointed Surgeon-General of the United States Army, and S. Weir Mitchell (1829-1914), who operated a hospital for nervous diseases in Philadelphia (1862). The team of Hammond and Mitchell virtually placed neurology on the medical map of the United States, and they were towers of strength in its early growth. The then new and rigorous neurologic enterprise began to sparkle in its activity, and superior medical minds were attracted to its ranks. The New York Neurological Society was founded in 1872 by a distinguished group, and three years later the American Neurological Association held its first meeting.—Pearce Bailey, M.D., The Past, Present and Future of Neurology in the United States, *Neurology*, January-February, 1951.

TREATMENT OF IDIOPATHIC SPONTANEOUS PNEUMOTHORAX

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and
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During the past four years the majority of idiopathic spontaneous pneumothorax patients admitted to the thoracic surgery section of the Veterans Administration Hospital (Kennedy) have been treated by simple operative procedures with highly satisfactory results. Our objective has been to induce rapid reexpansion of the lung by aspiration, water seal tube and open thoracotomy as the indications became clear from study of each case.

Kjaergaard[1] in 1932 was among the first to note the lack of relationship between pulmonary tuberculosis and spontaneous pneumothorax in healthy persons. This concept has been confirmed by the observations of Ornstein and Lercher[2] and others.

Spontaneous rupture of subpleural vesicles is the commonest cause of idiopathic pneumothorax, as it is in some spontaneous pneumothoraces complicating pulmonary tuberculosis (Perry[3]). The mechanism responsible for the rupture is increased pressure in the vesicle due to an improper function of the bronchus leading to the vesicle. Hayashi[4] has submitted evidence that suggests that a scar tissue flap in the bronchus is the intermittent obstructing agent permitting the expected increased pressure in the vesicle. Theoretically, congenital anomaly, functional imbalance, edema, fibrosis and infection may produce a valvelike obstruction in the bronchus.

Hamman[5] suggested that pneumothorax sometimes results from rupture of the mediastinal pleura under the force of mediastinal emphysema. Macklin and Macklin[6] showed that mediastinal emphysema and pneumothorax could result in dogs by retrograde dissection of air into the mediastinum from parenchymal alveolar rupture. This may represent the cause of spontaneous pneumothorax when careful examination of the lung reveals no apparent pleural defect.

Idiopathic spontaneous pneumothorax occurs more frequently in young men, but no age, sex or race appears to be immune. The collapse is usually of sudden onset and is unrelated to physical activity. Pain and dyspnea of some degree are usually present. Clinical study fails to demonstrate a pulmonary pathological process, and a high percentage of patients will eventually recover without treatment. Interestingly enough, tension pneumothorax is not commonly observed in this condition. Rarely is there hemorrhage into the pneumothorax, and occasionally there is bilateral pulmonary collapse. Captive lung that requires decortication for reexpansion is not uncommon after prolonged expectant treatment. A recurrence of the spontaneous collapse is not infrequent. Spontaneous reexpansion may require but a few hours or several weeks, depending on the persistence of the fistula and the degree of the collapse. Persistent collapse or frequently recurring spontaneous collapse have been recognized in recent years as indications for surgical treatment.

Active reexpansion of the spontaneously collapsed lung has not been advocated as acceptable treatment in reviews and reports of this condition. Of course, the necessity for decompression of tension pneumothorax is well recognized. Cautious aspiration of small amounts of air in order to prevent enlargement of the fistulous opening has been suggested frequently when collapse is of great degree but not necessarily productive of tension.

In our earlier cases thoracoscopy with the Coryllos thoracoscope was usually done in an attempt to visualize the offending lesion, but the actual leaking site was seldom observed with this method. Blebs, often multiple, were seen fairly frequently, but these were usually intact. Routine thoracoscopy introduces an element of delay in treatment unwarranted by the resultant benefits.

In this series evacuation of the air by intercostal catheter connected to an underwater seal was practiced in every case in which collapse was sufficient to permit introduction of the necessary trocar and cannula without danger. With rare exceptions, reexpansion occurred rapidly, often in a matter of minutes. In these cases suction has been applied through the thoracotomy bottle for a few moments at hourly intervals. When reexpansion was impossible or difficult to attain, the necessity for further surgical treatment was apparent. The possibility of the development of chronic pneumothorax was obviated. Complications were absent, and hospitalization was of short duration. With minimal inactivity, patients were able to return to gainful occupation much earlier than with the usual passive treatment. The technical aspects of the procedure itself are extremely simple, no more painful than thoracentesis and may be done as a ward or office procedure.

Forty patients have been admitted 46 times with 47 spontaneous pneumothoraxes at Kennedy Hospital since July 1946 (table 1). Four patients have been admitted twice, and one of these had pneumothorax first on one side, then on the other. The other three had ipsilateral recurrences. One patient had two ipsilateral recurrences. One patient had simultaneous bilateral pneumothorax.

From the Thoracic Surgery Section, Veterans Administration Medical Teaching Group, Veterans Administration Hospital (Kennedy), Memphis, Tenn.

Read before the Section on Diseases of the Chest at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

Reviewed in the Veterans Administration and published with the approval of the chief medical director. The statements and conclusions published by the authors are a result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

[1] Kjaergaard, H.: Spontaneous Pneumothorax in Apparently Healthy Persons, Acta med. Scandinav. 1932, suppl. 43, pp. 1-159 and 1-93.

[2] Ornstein, G. C., and Lercher, L.: Spontaneous Pneumothorax in Apparently Healthy Individuals: Clinical Study of 58 Cases with Discussion of Pathogenesis, Quart. Bull., Sea View Hosp. 7: 149-187 (April) 1942.

[3] Perry, K. M. A.: On Spontaneous Pneumothorax, Quart. J. Med. 8: 1-21 (Jan.) 1939.

[4] Hayashi: Cited by Kjaergaard.[1]

[5] Hamman, L.: Note on Mechanism of Spontaneous Pneumothorax, Ann. Int. Med. 13: 923-927 (Dec.) 1939.

[6] Macklin, M. T., and Macklin, C. C.: Malignant Interstitial Emphysema of Lungs and Mediastinum as Important Occult Complication in Many Respiratory Diseases and Other Conditions: Interpretation of Clinical Literature in Light of Laboratory Experiment, Medicine 23: 281-358 (Dec.) 1944.

The average age of the patients was 28.3 years, with ie eldest 59 and the youngest 20. Sixteen were in the 0 to 24 age group, 13 in the 26 to 29 group, seven in he 30 to 34 group and only four above 35. Although here is some age selectivity of patients admitted to veterans hospitals, the above figures closely parallel the age ncidence generally reported for the disease. All but one f the patients were men, and all but one were white. Iowever, all reports indicate a much higher incidence n men.

Except in a few instances, there was no apparent relationship to exertion such as coughing or lifting. In many patients the onset occurred while the patient was at rest —sitting in a chair or car or even during sleep. In every case onset of the collapse was associated with pain, usually in the affected side but occasionally in the midchest. This pain was usually sharp, sudden in onset, aggravated by respiration, and it gradually subsided over a period of hours to a dull ache.

The pain was usually followed by and occasionally oincident with dyspnea. In some instances dyspnea was bsent, in others so mild as to be unnoticed until attention was directed to it by questioning. Sometimes it was severe enough to require oxygen therapy.

Cough was sometimes noted after the collapse but was not severe. Some patients experienced coughing episodes previous to the collapse, but this was uncommon. In two instances temperature elevation as high as 100 F. was found on admission.

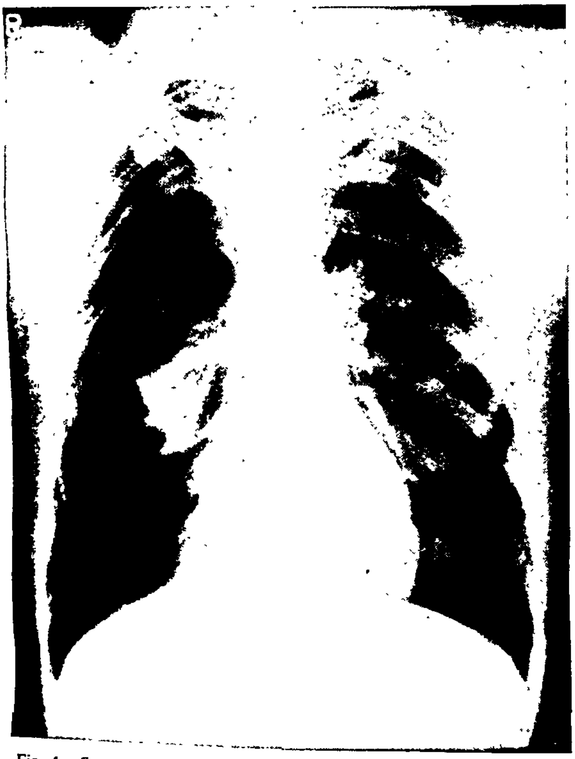

Fig. 1.—Spontaneous pneumothorax treated conservatively for 10 days without change.

A slight collection of fluid was frequently observed in the costophrenic angle of the affected side as revealed by fluoroscopy or the chest roentgenogram. One patient had a large serous effusion complicating the pneumothorax that responded to multiple needle aspirations. This patient is being repeatedly observed for evidence of underlying disease. Associated hemothorax was observed in one patient.

The duration of the collapse before admission was 24 hours or less in 18 instances, one to seven days in 17 instances, one to three weeks in eight instances and over one month in four instances. The shortest duration before admission was two hours and the longest three months.

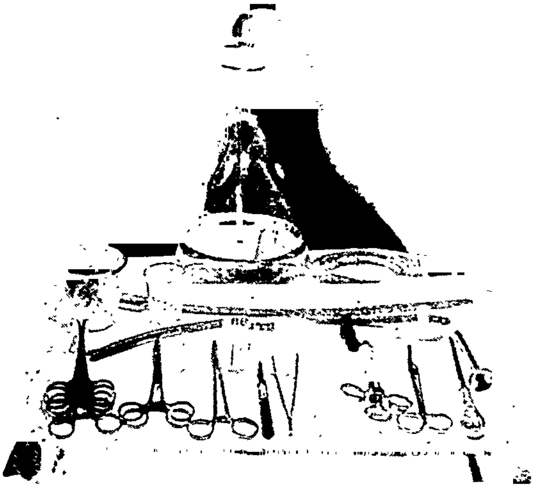

Fig. 2.—Contents of the tray and bottle for the institution of closed thoracotomy drainage.

The patient with a diagnosis of spontaneous pneumothorax on admission to the ward is subjected to immediate fluoroscopic examination, and a chest roentgenogram is made. Expiration and inspiration films are made when there is doubt about the diagnosis, since small pneumothoraces may not be visible on full inspiration. When the surface of the lung is approximately two inches or more from the lateral chest wall a simple trocar and cannula is inserted, usually in the second or third interspace just behind the pectoralis major muscle. After infiltrating with 1 per cent procaine, a small skin incision (approximately 1 cm.) is made. Introduction of the trocar is painless if the procaine solution is properly injected. A no. 24 Foley catheter is then inserted through the cannula, the cannula removed and the balloon of the catheter inflated. The catheter is connected to a glass tube under water in a large Erlenmeyer flask. An untied silk suture is placed for use in the closure of the skin when the catheter is removed (figs. 1, 2, 3).

TABLE 1.—*Spontaneous Pneumothoraxes Seen in 40 Patients*

Thoracic Surgery Section, Kennedy VA Hospital,
June 15, 1946, to May 15, 1950

	Unilateral Collapse			
	One Lung	Both Lungs	Bilateral Collapse	Total
Patients	38	1	1	40
Pneumothoraxes	38	2	2	42
Admissions	38	2	1	41
Recurrence in four patients	..	..	..	5

Occasionally reexpansion of the lung may cause paroxysmal coughing for a short period. Reexpansion usually occurs rapidly, often in a matter of minutes. The catheter remains in place until no more air can be evacuated and until the column of water visible in the glass tube has ceased to fluctuate for 24 to 48 hours. The balloon is then deflated, the catheter removed rapidly during forced expiration and sulfadiazine ointment applied to the wound during simultaneous tying of the previously placed suture to prevent entry of air into the pleural space. Daily fluoroscopic examination is carried out while the catheter is in place, and chest roentgenograms are made following reexpansion of the lung (fig. 4).

Unless parenchymal changes are noted, or unless there has been an unusual collection of pleural fluid or the course complicated by fever, no special bacteriological studies are made. It has been well established that spontaneous pneumothorax in the apparently healthy person is rarely a precursor of or manifestation of underlying pulmonary disease. However, it should be borne in mind that pulmonary tuberculosis and other pulmonary diseases may be complicated by spontaneous pneumothorax. Physical and roentgenographic examination will usually disclose such underlying disease.

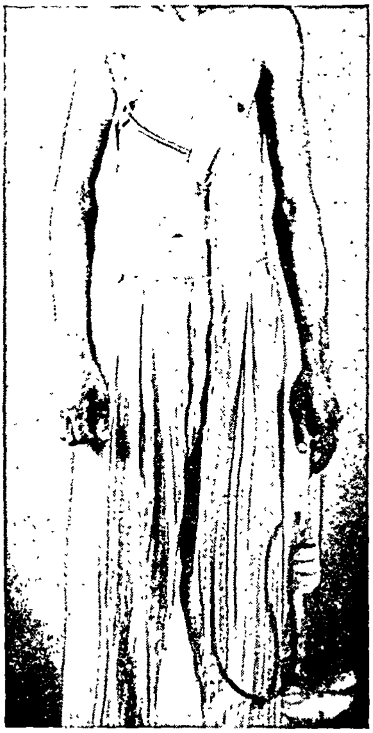
Fig. 3.—Patient whose roentgenogram is shown in figure 1 after the institution of closed thoracotomy drainage.

In 17 instances the catheter was not used. Ten pneumothoraces in nine cases were small and reexpanded rapidly without therapy. In one early case thoracoscopy revealed emphysematous blebs, which were excised during thoracotomy.

Aspiration of air was accomplished as a primary procedure in four patients with five pneumothoraxes. Reexpansion occurred in three patients. Aspiration of air was unsuccessful in one case, and thoracotomy was necessary.

Generally we believe that if thoracentesis is necessary to aid reexpansion the intercostal catheter introduction will be a safe procedure that allows more rapid reexpansion than other methods of treatment. Noteworthy perhaps is the aseptic pleuritic reaction induced by the intrapleural catheter, which by its adhesive effect may tend to prevent recurrences. However, there should be no objection to a judicious trial of aspiration when this seems advisable. The use of an intercostal catheter should not necessarily require hospitalization.

An intercostal Foley catheter was used in 30 instances. There were three failures. In one patient the pneumothorax had been present for two months, and decortication was necessary to effect reexpansion. In another a defect was present in a large bulla that was repaired during thoracotomy. In a third patient the lung was reexpanded, but the pneumothorax recurred promptly, and it was necessary to excise a large bulla to achieve the desired result. In one patient a second catheter was inserted into a pocketed area of pneumothorax not evacuated by the first catheter. This patient had extensive emphysema.

The catheter remained in place for an average time o four days. The longest period was nine days, and th shortest period was two days. Except for the failure noted above, 'there were no complications. The patient were routinely given penicillin prophylactically. An occasional patient had a temperature elevation as high as 100 F. during the time the tube resided in the pleura cavity. One patient developed an allergic reaction t penicillin that responded to appropriate therapy.

Table 2.—*Treatment Used for Spontaneous Pneumothoraxe in 40 Patients*

Thoracic Surgery Section, Kennedy VA Hospital, June 15, 1946, to May 15, 1950

Treatment	Patients	Pneumothoraxes	Failures Requiring Operation	Treatment of Recurrence	
				Catheter	Operatio
Observation	9	10	0	0	1
Thoracentesis	4	5	1	0	0
Catheter	27	27	3	3	1
Total	40	42	4	3	2

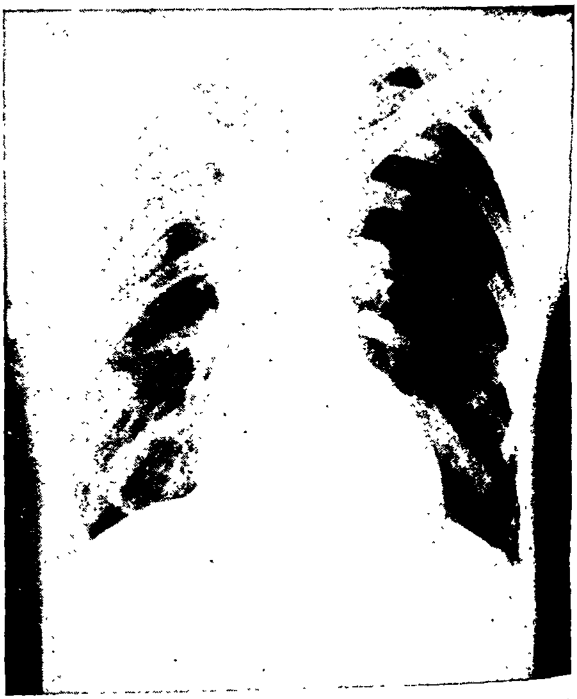
Fig. 4.—Roentgenogram of same patient taken 10 minutes after th institution of closed thoracotomy drainage. The lung has reexpanded Subsequent roentgenograms showed the lung to be entirely free o pathology.

The average time for reexpansion has been variously reported as one to four weeks (Ornstein), four weeks (Rottenberg[7]), seven weeks (Hyde and Hyde[8]), one

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7. Rottenberg, L. A., and Golden, R.: Spontaneous Pneumothorax: A Survey of 105 Cases, Radiology 53: 157-167 (Aug.) 1949.

8. Hyde, B., and Hyde, L.: Benign Idiopathic Spontaneous Pneumothorax: Review of 63 Cases, Am. J. M. Sc. 215: 427-430 (April) 1948.

to nine weeks (Niehaus [9]) and six weeks to 2½ months (Kjaergaard [1]). Myerson [10] reported an average hospital stay of 11 days in a series of 36 patients, but it was not stated whether the lungs of his patients were fully eexpanded at discharge, or whether the patients were hen returned to their occupations. The average period of hospitalization for our patients treated successfully with the catheter was 11½ days. Hospitalization for a minimal collapse averaged 10.9 days. Reexpansion of the lung was complete in nearly every patient at the time of discharge, and patients were permitted to return to work.

Six patients required thoracotomy because of failure of more conservative measures, or because surgical treatment was indicated for roentgenographically demonstrated blebs or bullae. One patient had been treated by bed rest over a period of three months, often requiring oxygen therapy for severe dyspnea during that time. Another had been followed conservatively for two months, and decortication was necessary to effect reexpansion.

Recurrence is a characteristic of spontaneous pneumothorax. Ten of the patients reported gave a history of one or more previous similar episodes. Three patients had recurrence after catheter reexpansion, and one of these experienced two recurrences. The latter was a 54 year old Negro with extensive emphysema. There is one patient who suffered the condition in the contralateral side one year after the first episode.

The recurrence of spontaneous collapse in four of these 40 patients occurred within a period of four months. Twenty-two patients have been followed from one to three years postoperatively. None of these 22 patients has experienced recurrences. It was not possible to follow five patients.

In the past injection or insufflation of various agents into the pleural space has been advised to aid in prevention of recurrence. It is our opinion that these methods are to be condemned because of the resultant reduction in pulmonary function and the discomforts endured by many of the patients who have received these forms of therapy.

SUMMARY

Spontaneous pneumothorax occurring in healthy persons is a temporarily disabling condition that in most instances tends to correct itself. Simple operative treatment results in rapid reexpansion of the lung, greatly shortened period of disability, prevention of the undesired state of chronic pneumothorax and earlier return of the patient to his occupation. The introduction of the intercostal catheter for rapid reexpansion of the lung is briefly described. The indications for and the results of the use of this method in a group of 40 patients treated during the past four years are described. There have been no complications. Parenchymal disease has not appeared in the 22 patients who have been followed for periods of one to three years. This minor operation is an achievement of simplicity in the treatment of spontaneous pneumothorax.

9. Niehaus, R. F.: Simple Spontaneous Pneumothorax in Apparently Healthy Individuals: Report of 24 Cases, Am. J. Roentgenol. **57**: 12-27 (Jan.) 1947.

10. Myerson, R. M.: Spontaneous Pneumothorax: Clinical Study of 100 Consecutive Cases, New England J. Med. **238**: 461-463 (April) 1948.

EMPYEMA IN INFANTS AND CHILDREN

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and
Edgar Davis, M.D., Washington, D. C.

This paper presents a statistical analysis of 37 patients with empyema treated at the Children's Hospital, Washington, D. C., from Jan. 1, 1943 to April 1, 1948, with observations on the etiology, diagnosis, therapy and complications of the disease. The criteria used in selecting cases for this study were the presence of purulent pleural fluid and positive bacteriologic findings resulting from culture of this fluid, either during life or on postmortem examination. The diagnosis was made on autopsy specimens in eight instances; two of the deaths having followed surgical procedures. Those cases having no bacteriologic proof and those following traumas or the aspiration of foreign bodies are excluded from the series. The right pleura was involved in 21 instances (56.7 per cent), the left pleura in 13 instances (35 per cent) and both pleurae in three instances (8 per cent).

During this period of five years and three months, the incidence of pneumonia fluctuated from 625 cases in 1943 to 799 cases in 1946. Thirty-three (90 per cent) of the 37 cases of empyema occurred during the first three years of this study (table 1). During 1943 and 1944 empyema developed in six patients (16 per cent) who were receiving chemotherapy for pneumonia. None of the patients had received penicillin therapy. Although a few cases of sterile pleural effusion have occurred since 1944, there have been no cases of empyema as a complication of pneumonia. Of the 31 patients (84 per cent) in whom empyema developed before admission to the hospital, inadequate amounts of penicillin alone had been used in one instance, penicillin and a sulfonamide in two instances, also in inadequate amounts, and a sulfonamide had been used in 14 patients, 12 of whom had received the drug in inadequate amounts over a period of from one to three days. Sulfonamide therapy had been discontinued several days prior to the admission of the other three patients. Empyema did not develop in any patient with pneumonia in whom penicillin in adequate amounts had been administered early enough.

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In this series, empyema developed most frequently during February, March, April, January and June, in the order named (chart 1). There is not only a seasonal but also an annual variation in empyema complicating pulmonary infections. One must be cautious, therefore, in attempting to explain the sudden drop from 10 or 12 cases annually, from 1943 through 1945, to one or two cases in *1946* and *1947*.

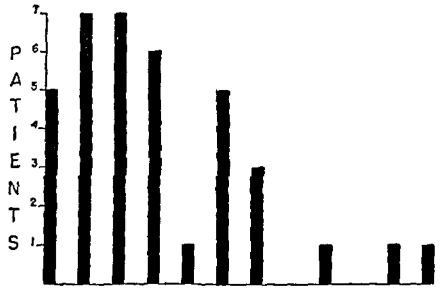

Chart 1.—Seasonal variation in empyema complicating pulmonary infections.

Fourteen (38 per cent) of the patients were under one year of age, while seven were in their second year. Therefore, 21 of the 37 cases (57 per cent) developed during the patients' first two years while only 16 developed between their second and twelfth years of age (chart 2). Although the admission records of the hospital show that there were only twice as many white as there were Negro patients admitted to the hospital, the incidence of empyema was four times greater in the white patients than in the Negro ones.

Staphylococci were recovered in 21 (56 per cent), hemolytic streptococci in 10 (28 per cent) and pneumococci in six (16 per cent) of the patients. Staphylococcus was the infecting organism in all infants under one year of age. In Forbes'[1] report of 37 cases he cites three additional series in the literature[2] (table 2), making a total of 146 cases in which it was possible to establish the presence of staphylococcic empyema in infants under 1 year of age. In the 146 cases reported by Forbes, Staphylococcus as the etiological organism varied from 17.4 to 73 per cent, with an average o 45.2 per cent. In 14 (37 per cent) of our patients unde 1 year of age, the empyema was due to a staphylococci infection. This was in sharp contrast to the empyem caused by pneumococci and streptococci in older ag groups (table 3). Blood cultures were made in 1 instances. Four cultures, one of which was made a autopsy, were positive for organisms different tha those found in the empyema. Throat cultures were (no aid in establishing the etiological organism of tl pleura.

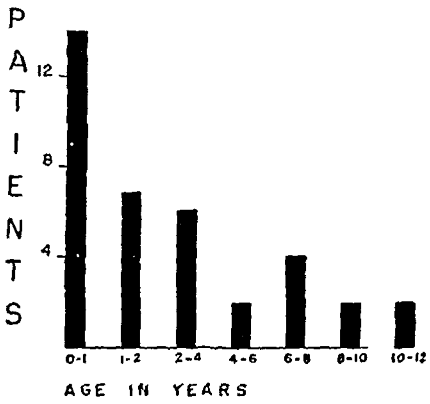

Chart 2.—Incidence of empyema according to age.

Without exception, the empyema followed upp respiratory infections, ten of which (27.5 per cent were originally diagnosed as pneumonia and four (10. per cent) as measles. The onset was gradual in 2 (67.8 per cent). In 23 cases (62 per cent) there wa no intermission between the symptoms of the uppe respiratory infection and the onset of symptoms fron empyema, 13 patients having been ill for less than on week and nine for less than four days before recognition of the empyema. This is in contradistinction tc the common conception that there is usually an intermission between the respiratory infection and the empyema. In 11 of the 13 patients in whom empyema developed within one week after an upper respirator infection, the empyema was staphylococcic in origin.

TABLE 1.—*Yearly Incidence of Empyema and Pneumonia*

Year	Empyema Cases	Pneumonia Cases
1943	10	625
1944	12	687
1945	11	762
1946	2	799
1947	1	657
*1948**	1	447

* January, February and March.

TABLE 2.—*Incidence of Staphylococcic Empyema in Infan Under One Year of Age*

Source	Years	No. Cases	Staph. Cases	Staph %
Spence, New York City	1913-1920	53	10	18.9
Neuhof & Berck, New York City	1928-1932	21	15	17.4
Hochberg & Kramer, Brooklyn	1929-1936	35	14	40
Forbes, St. Louis	1934-1943	37	27	73
Children's Hosp., Wash., D. C.	1943-1948	14	14	100
Total	....	160	80	Av.59

TABLE 3.—*Etiological Organism According to Age*

Age, Yr.	No. Patients	Staph. Cases	Pneumo. Cases	Strep. Cases
0-1	14	14	..	..
1-2	7	4	1	2
2-4	7	2	1	4
4-8	6	1	2	3
8-12	3	..	2	1
Total	37	21	6	10

On their admission to the hospital, patients presented a multiplicity of symptoms, mostly referable tc the respiratory infection. All of them had colds o varying degree. Physical examination of the chest revealed classical findings on percussion. However, auscultation disclosed rales in only 29.3 per cent, decrease or absence of breath sounds, with or without rales, in

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1. Forbes, G. B.: J. Pediat. **29**: 45, 1946.

2. (*a*) Spence, R. C.: Empyema in Infants and Young Children, Am. J. Dis. Child. **20**: 545 (Dec.) 1920. (*b*) Neuhof, H., and Berck, M.: Staphylococcic Empyema and Pyopneumothorax: Pathogenesis, Pathology, Symptoms and Treatment, Arch. Surg. **30**: 543 (March) 1935. (*c*) Hochberg, L. A., and Kramer, B.: Acute Empyema of Chest in Children: Review of 300 Cases, Am. J. Dis. Child. **57**: 1310 (June) 1939.

65.3 per cent and bronchial breath sounds in 5.4 per cent of the patients. According to the normal variation of respiratory rates in children of different ages, only 15 of the 37 patients had an increased rate. Temperature and pulse varied a great deal. Eight patients (21 per cent) were noted to have an injected throat; four patients with hemolytic streptococcic empyema had nuchal rigidity; 16 patients had abdominal distention, and nine had hepatomegaly. Hemograms revealed anemia as a prominent feature; 64.8 per cent of the children had a hemoglobin content below 10 Gm. The most frequent roentgen finding was opacity of the side involved, suggesting the presence of fluid.

The course of the disease and the prognosis varied a great deal. In 1943, the longest period of hospitalization was 150 days and the shortest, 37 days, with an average of 75 days. In 1946, this average had dropped to 24 days. In 1947, the one patient reported was in the hospital 38 days; during the first 16 days he was treated with penicillin without benefit. After surgery, he remained in the hospital for 22 days.

The severity of the illness had a very close relationship with the duration of symptoms prior to entry. This group of seriously ill children on admission had a short preceding history indicating a fulminating course. They were usually dyspneic, cyanotic and had a large part of one or both pleurae involved. In these patients who had a gradual weight drop without a gain complications were more likely to develop. All of the cases caused by hemolytic Staphylococcus aureus were in this class. A very grave prognostic sign was the continuance of a rapid pulse and respiration with a drop in the temperature to near normal.

Eight of the 37 patients, seven of them under 5 years of age, had pyopneumothorax (bronchopleural fistula). Five were caused by staphylococci, two by hemolytic streptococci and one by pneumococci. Bronchopleural fistulas were manifested by the acute onset of dyspnea in every patient, severe cyanosis in over half of them and evidence of extreme illness in all. It is important to realize that children under 8 years of age may not cough up large quantities of purulent material through bronchopleural fistulas as is usual in adults.

Six additional patients were diagnosed by roentgenogram as having pyopneumothorax. If these six patients were considered as having empyema with bronchopleural fistulas and were added to the eight known cases mentioned above, we would have a total of 14 (38 per cent) of the 37 patients, which is almost identical to the figure of 40 per cent reported by Forbes. The last mentioned six patients have been restudied, bearing in mind the time relationship between thoracentesis and roentgenogram of the chest. Since roentgenograms of the chest did not reveal a fluid level in any of the patients prior to thoracentesis, it is logical to assume that in the roentgenogram taken after the thoracentesis the air had been inadvertently introduced. We, therefore, do not consider these six cases as representative of complications.

In the literature, there are several large series on the subject of empyema in children, which do not mention bronchopleural fistulas. Probably this complication has not received proper attention. Since patients with this condition are much more critically ill than those who have no fistula and since there is danger of immediate death from aspiration of the infected material into the good lung or from a tension pyopneumothorax, it is imperative that proper treatment be instituted without delay. In our opinion, the objection by some physicians to a roentgen examination of the chest of a critically ill patient with a pulmonary infection on his admission to the hospital is not justified.

TREATMENT AND RESULTS

Treatment consisted of the usual supportive measures, such as proteins, fluids and blood transfusions, with variations as indicated. There were 28 patients with empyema who were treated surgically while nine were treated medically. Six patients were moribund; they died shortly after admission. Their diagnoses were made at autopsy. A discussion of the complications present in all of these patients appears at the end of this article. Five patients started on a regimen consisting of thoracenteses with intrapleural administration of penicillin gave the following results.

In 1945, three patients had thoracentesis with introduction into the pleural cavity of from 5,000 to 50,000 units of penicillin, repeated on from one to four occasions, resulting in complete cure. The material aspirated from the pleural cavity of each of these three patients was either turbid or contained considerable flocculent material, but it did not have the consistency of thick pus. Sulfonamides and parenteral penicillin were also administered. Two of the cases were of pneumococcic and one of staphylococcic origin. The average period of hospitalization of these patients was 35 days. None has had recurrence.

Two patients, aged 10 years and 5 months, respectively, entered the hospital, the former 35 days and the latter three days after the onset of his illness. The infecting organism was Streptococcus in the first and Staphylococcus in the second patient. On admission, thoracentesis revealed thick pus. The 10 year old boy had a bronchopleural fistula treated with penicillin parenterally for six days before surgical drainage. Because of unsuitable living conditions at home, it was deemed best to keep him at the hospital for two months after his operation. The infant had two thoracenteses, intrapleural administration of penicillin during the first three days and surgical drainage on the fourth day. His postoperative stay in the hospital covered 79 days. Both patients recovered completely.

Surgical drainage was carried out on 18 patients when the infected pleural effusion became purulent. There were no complications, no deaths and no recurrences. Eight cases of empyema with complications were found. Six, associated with bronchopleural fistula alone, were treated successfully with immediate surgical drainage. One infant, 19 days old, with multiple lung abscesses and a bronchopleural fistula, died 10 days postoperatively. A boy, 2½ years of age, who had empyema complicated with suppurative pericarditis, myocarditis, bronchiectasis, atelectasis and generalized pulmonary fibrosis, died 40 days after drainage of the empyema.

The mortality in the 37 cases of empyema was 21.8 per cent. Of 28 patients with empyema treated surgically there were two deaths, both in patients having complications, giving a mortality of 7.1 per cent in the surgically treated cases. Fifteen of the 28 patients were under 2 years of age. Of the nine patients treated medically, six died, a mortality of 66.8 per cent. Since no therapy can be critically evaluated in moribund patients, and since death ensued in six patients before definitive treatment could be instituted, we have a corrected total mortality rate of two in 31 patients, or 6.4 per cent.

In our series, there were nine patients below 3 months of age, with a mortality rate of 44.4 per cent; two between 3 and 6 months of age, with a mortality rate of 50 per cent; three between 6 and 12 months of age, with no deaths; 15 between 1 and 5 years of age, with three deaths (20 per cent), and eight between 5 and 14, with one death (12.5 per cent). Forbes, in his series, reports a mortality rate of 42.8 per cent in patients under 3 months of age, 16.7 per cent in those between 3 and 6 months of age and 57.1 per cent in those between 6 and 12 months of age.

Our mortality rate for infants under 1 year of age having staphylococcic empyema was 35 per cent (uncorrected). Other case reports of staphylococcic empyema in this age group include Forbes' series, with a mortality rate of 40.7 per cent; Ladd and Swan,[3] mortality rate 36.3 per cent; Riley,[4] mortality rate 50 per cent; McEnery and Brennemann,[5] mortality rate 50 per cent; Hochberg and Kramer,[2c] mortality rate 52.5 per cent, and Neuhof and Berck,[2b] 66.7 per cent. Our total uncorrected mortality rate was 21.6 per cent. Forbes reported a total mortality rate of 26 per cent; Ladd and Swan, 27.3 per cent; Riley, 34.5 per cent; Hochberg and Kramer, 40 per cent; Neuhof and Berck, 42 per cent; McEnery and Brennemann, per cent; Spence, 44 per cent, and Farr and Levi 66.7 per cent.

Complications Revealed at Autopsy.—Of the e patients on whom autopsies were performed, two following operation. One patient, an infant 19 day age, was found at autopsy to have multiple lung scesses and bronchopleural fistula, while the oth boy 2½ years of age, was found to have suppur pericarditis, myocarditis, bronchiectasis, atelectasis generalized pulmonary fibrosis. Of the remaining autopsies performed on nonsurgical patients, carditis was found in three instances, while mul lung abscesses, peritonitis and mediastinitis were covered in one instance each.

SUMMARY AND CONCLUSIONS

Thirty-seven cases of empyema during a perio five and a quarter years are discussed. The incid of empyema in infants was high, as was also the tality rate. Staphylococcus was the infecting orga in all instances of empyema in infants in this se Hemolytic Staphylococcus aureus occurred in the r seriously ill children. The importance of the diag and prompt therapy of pyopneumothorax as a c plication of empyema is discussed. Surgery by drai of the empyema, supportive therapy and selective biotics would seem to be the treatment of choice. complications found on autopsy of the eight pat is reviewed. All of the patients who died had c plications other than the empyema.

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4. Riley, C. M.: J. Pediat. 24:577, 1944.
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6. Farr, C. E., and Levine, M. I.: Surg., Gynec. & Obst. 46:79,

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SELF-ADMINISTRATION OF A MERCURIAL DIURETIC

EXPERIENCE OF PATIENTS WITH MERCAPTOMERIN (THIOMERIN®) SODIUM

Susannah Krehbiel, M.D.
and
Harold J. Stewart, M.D., New York

Since it was first discovered that certain mercurial compounds had diuretic properties, continuous progress has been made in finding new chemical variants which were more effective but less toxic. Mercaptomerin (thiomerin®) sodium is one of the preparations developed more recently. It combines sodium thioglycollate, a monosulfhydryl compound, with an organic mercurial to form the disodium salt of N (γ-carboxymethyl mercaptomercuri-β-methoxy) propyl camphoramic acid. The results of clinical observations carried out by Stewart, McCoy, Shepard and Luckey,[1] Herrmann, Chı Hejtmancik, and Sims,[2] Grossman, Weston, Edelm and Leiter,[3] Winik and Benedict [4] and Enselberg Simmons [5] have shown that mercaptomerin sodium is effective diuretic not only when given intramuscula and intravenously but also when given subcutaneou There are many patients with cardiac disease who quire frequent and regular injections of mercurial retics to maintain compensation and an ambulat status. The fact that mercaptomerin sodium is effect when given subcutaneously led us to the notion that tients could be taught to administer the drug to the selves, just as diabetic patients are taught to adminis their own insulin. The following study was theref undertaken to ascertain the practicability of a regimen self administration of mercaptomerin sodium.

Miss Henrietta Rogers, R.N., assisted in this study.
Dr. Krehbiel is a Fellow in Medicine (Cardiology).
Supported by a Grant-in-Aid from the Campbell Pharmaceutical Co., New York.
From the Department of Medicine, New York Hospital and Cornell University Medical College, New York.
Read before the Sixty-Third Annual Meeting of the Association of American Physicians, Atlantic City, N. J., May 1950.

METHOD

Patients participating in this study were ambulatory and attended the adult cardiac clinic of the New York Hospital. All required injections of mercurial diuretics at regular and frequent intervals for the maintenance of cardiac compensation. Patients selected for this study were first given an introductory group lecture, in which was described the project of teaching them to administer the mercaptomerin sodium injection to themselves, so that after learning the injection technique they could be placed on a regimen of giving the injections at home; each patient's mercurial regimen corresponded in frequency to the clinic routine to which the patient was already accustomed and was in accord with the orders of the regular clinic physician. The patients were instructed briefly in the techniques of sterilization and injection, by demonstration. They were taught to recognize the signs of deterioration of the drug in solution—a change from colorless to a yellowish hue and/or the presence of black specks of variable size and number. Each patient was then given an individual one-half hour teaching session. A mercaptomerin sodium instruction sheet was turned over to him for his permanent use. This contained complete information regarding the materials required for home sterilization and injection, the essential steps in sterilization, including the handling of equipment, the method used to draw the solution of the drug into the syringe under sterile conditions, the technique of injection and the proper storage of the mercaptomerin sodium and the equipment. The following list includes the necessary supplies: saucepan, strainer, alcohol, cotton, syringe, needles and mercaptomerin sodium.

At the time of the first individual teaching session, each patient went through the entire procedure under supervision. The reason for sterile procedure was explained in detail. The patient was corrected when necessary. If difficulty was encountered with any part of the procedure, that part was repeated until it could be performed satisfactorily. At this first session the patient was expected to make the self injection. Having the patient face this problem immediately dispelled his timidity about the procedure, so that at subsequent teaching sessions he was free to concentrate on learning the technique. Two individual clinic teaching sessions were usually required. Further individual sessions were provided when they were indicated.

The thigh was selected as the site for self injection. This area was the most accessible one. Patients were instructed to use alternate thighs for successive injections and to rotate the sites on the same leg.

When it was thought that the patient could perform the routine satisfactorily, arrangements were made for the nurse to visit the home in order to supervise the first injection. The time of the last clinic teaching lesson the patient was given a prescription for one 2 cc. syringe and three 25 gage ⅝ inch (1.6 cm.) needles. The nurse took the mercaptomerin sodium made up into solution to the home on her visit. A record was kept of the lot number of the vial and of the future dates of injection which that amount of the drug would cover. At the time of the home visit the nurse checked the equipment and then watched the patient carry out the whole procedure of injection. Revisits to the clinic were scheduled after one to three unsupervised injections at home.

On one of the early visits to the clinic for teaching sessions, the case histories were reviewed and the patients were examined. Initial records were made of the cardiac diagnoses, the duration of symptoms of cardiac failure, the use of digitalis, ammonium chloride, mercaptomerin sodium and other mercurials, with the length of time each had been required, and the presence of complicating diseases. The initial physical examinations provided base lines of the status of patients for comparison with subsequent visits. On each clinic visit the nurse recorded the temperature, pulse and weight; patients were examined and records were kept relating to the state of compensation. On the basis of these findings and of the changes in weight, an opinion relating to the maintenance of equilibrium was formed for each visit. The patient was also questioned regarding diuresis resulting from home injections, untoward effects, such as pain or nodule formation at the site of injection, and systemic disturbances, such as nausea, vomiting and diarrhea. Examinations were made to detect induration or nodule formation. Revisits were scheduled at approximately three week intervals. After patients had been on the home regimen for some time, they were taught to mix the mercaptomerin sodium with distilled water, maintaining a sterile technique and using the same needle and syringe as for injection.

At the close of the special study patients were returned to their regular clinic physicians for continued observation. Those whose self injection schedule had been satisfactory were recommended for continuance of the program.

OBSERVATIONS

Over a five month period, 71 ambulatory patients with cardiac disease were taught to give their own mercaptomerin sodium injections subcutaneously. In etiology and age they represented a cross section of the clinic population, being made up, for the most part, of patients suffering from rheumatic, arteriosclerotic and hypertensive heart diseases. A total of 1,425 injections of mercaptomerin sodium were self administered by patients. The total number of injections given by each patient ranged between three and 52. At the time the study was terminated most of the patients were giving themselves mercaptomerin sodium in 2 cc. amounts once (38 patients) or twice a week (25 patients); a few required a smaller amount at these intervals or the 2 cc. amount less frequently. Most of the injection schedules remained constant during the period of study, but in 15, alterations were made.

The majority of the patients, namely 50, required two clinic teaching sessions before starting on self injections at home; four required only one session, 14 required three, four required four and two required five.

During the period of the study one patient was observed for five months, 13 were observed for four and one-half months, 15 for four months, 10 for three and one-half months, 9 for three months, 5 for two and one-half months, 4 for two months, three for one and one-half months, 5 for one month and 6 for two weeks.

The assessment of maintenance of equilibrium was based on absence of an increase in symptoms or signs of cardiac failure and the relative constancy of the body weight. Sixty-two of the 71 patients remained in a state of equilibrium on the self-injection regimen during the period of study. In the other nine patients increasing symptoms of cardiac failure developed—an incidence not apparently greater than in other patients who came to the clinic for all of their mercurial injections. In six of these nine patients, failure was secondary to a respiratory infection. In one of the remaining three digitalis toxicity followed by pulmonary embolus developed; in another there was evidence of a rapidly decreasing myocardial reserve, and in the third decompensation was a result of hormone therapy for osteoporosis with concomitant salt retention.

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2. Herrmann, G. R.; Chriss, J. W.; Hejtmancik, M. R., and Sims, R. M.: Treatment of Myocardial Failure, Texas State J. Med. 45: 79, 1949.
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4. Winik, I. W., and Benedict, R. B.: Clinical Studies on Thiomerin: A New Mercurial Diuretic, J. Lab. & Clin. Med. 34: 1254, 1949.
5. Enselberg, C. D., and Simmons, H. G.: Clinical Experience with Thiomerin, Am. J. M. Sc. 219: 139, 1950.

REACTIONS

Thirty-four of the 71 patients experienced no untoward reactions. The remainder had either discomfort at the injection site or local nodule formation.

Forty-seven patients did not complain at any time of any discomfort at the site of injection. Twenty-four complained of discomfort after being questioned regarding it. In 10 of these the discomfort occurred consistently after each injection; in the remaining five, discomfort was intermittent. It was described as a stinging or burning sensation of varying duration from five minutes to two days. In none of these patients was the distress of such severity that they wished another route of administration.

Observations were made to ascertain the cause of the local discomfort certain patients experienced. The effects of the subcutaneous injection of 2 cc. amounts of isotonic sodium chloride solution, of mercaptomerin sodium and of distilled water were compared. Saline solution gave discomfort in only a few patients. Distilled water and mercaptomerin sodium solution induced distress in approximately the same number of patients, which amounted to pain following most of the distilled water injections; in only one patient was the distress from mercaptomerin sodium severer. It appeared therefore that the local discomfort following the subcutaneous injection of mercaptomerin sodium can for the most part be attributed to the distilled water in which it is dissolved.

Forty-six patients did not exhibit nodule formation at the sites of injection, a reaction seen in 25 patients. In 23 of these, nodules were of intermittent and isolated occurrence. Two patients had small nodules at the site of each injection. One of these varied the prescribed technique of injection. The other, who was obese, exhibited nodules at the site of injection on most occasions, and intravenous administration was instituted. This was the only patient for whom discontinuance of mercaptomerin sodium by the subcutaneous route appeared indicated.

Local infection occurred only five times in the 1,425 injections. In four patients it responded to the application of hot wet compresses; in the other one the cellulitis progressed to abscess formation and necessitated surgical intervention. Small areas of necrosis of the skin occurred once in one patient and twice in another, when the injection had been given too superficially. Nausea, vomiting and diarrhea were not encountered.

COMMENT

Our present experience, based on a study of 71 patients over a period of five months, shows that mercaptomerin sodium lends itself to self administration by patients. Patients can safely inject the drug subcutaneously provided supervision can be maintained and they can be seen by their physicians at frequent enough intervals to detect need for change in dosage and untoward effects. Equilibrium of the cardiac status was as easily maintained when patients gave themselves the injections at prescribed intervals and came to the clinic at intervals of two weeks or a month as in those coming to the clinic for all injections. The incidence of local discomfort and of nodules did not appear to be any greater than when the injections were given in the clinic or in the hospital, and the incidence of local infection was small.

As long as it is certain that the proper injection technique is being employed, the occurrence of transient local discomfort or nodule formation is not a contraindication to the use of the drug. Discomfort, whether intermittent or consistent, was not so severe that the patients wished to discontinue use of the drug. Indeed, 16 who experienced burning sensations consistently did not admit to having this difficulty until after they had been questioned regarding it on several occasions. Ten had been receiving the drug six months or longer before reporting distress.

It was found that the only restrictions on the self administration of mercaptomerin sodium were those resulting from the limitations of the patients. The limitations were dislike of self injection, mental incompetence and physical disability. Nineteen patients who started on the training course did not progress to self administration. Thirteen fell into the first category, four into the second and two into the third.

Immediate or delayed toxic reactions to mercaptomerin sodium were not encountered. Collapse, cardiac arrhythmia and renal damage were not observed. Skin rash and fever attributable to mercaptomerin sodium did not occur.

During the course of the study, five patients on the self administration regimen died. All deaths were sudden, with the immediate cause of death thought to be myocardial infarction in three and pulmonary embolization in one. In the fifth patient death occurred during hospitalization for Friedländer pneumonia. Each of these patients had been maintained in equilibrium on the regimen, and we were of the opinion that mercaptomerin sodium was not implicated.

According to attitude regarding the self-injection regimen, the patients could be divided into three groups. There were those who thought it was convenient and did not want to come to the clinic for injection again for fear that they would lose the advantages which had been gained. These were job holders, housewives and mothers, all with so many responsibilities that they could ill afford the time spent in coming to the clinic. The fact that they could give themselves mercaptomerin sodium at home frequently made it possible to be gainfully employed, a situation which was otherwise impossible. In certain patients the financial saving which resulted from the reduction in clinic visits was relatively great. There were 45 patients in this group. In the second group were those who accepted the home regimen as satisfactory but were passive in their enthusiasm even though they enjoyed the benefits of time and money saved. There were 17 patients in this group. The last group was made up of patients who preferred to come to the clinic for injection, even though they had done well on the self injection routine. Six patients comprised this group. None of these were working. They enjoyed the social outlet which their visits to the clinic afforded.

From the point of view of the clinic, there was a marked decrease in the routine work due to the reduction in clinic visits for mercurial injections. This applied, first, to the clinic aide and to the record room, since patients were processed less often and charts requisitioned less frequently. Secondly, there was a reduction in the work of the medical staff, who formerly were required to see the patients and sign the chart before the injection could be given. And, finally, the nursing personnel experienced a marked decrease both in the amount of preparation required at each clinic session and in the number of injections given. The average number of visits saved was around 150 each month, or 20 a clinic session.

One drawback in the early preparations of the drug was the instability of the drug after it had been dissolved. The stability has been improved, with the result that now deterioration has not occurred after three or four months even at room temperature. We did not find deterioration a problem, since patients knew how to mix the drug and prepared a bottle just before it was needed.

It appears from this study that more widespread application of the self injection of this drug by patients under physicians' guidance should take place. The fact that it is as effective as other mercurials in producing diuresis, together with the fact that patients can be taught to administer it to themselves by the subcutaneous route, points the way to its increasing use in self-injection regimens. This study was carried out under rigidly controlled conditions. Many of the precautions we took could be dispensed with in ordinary circumstances without sacrifice of any of the factors of safety. It would be for the physician to determine the mental competence, physical ability and willingness of the patient to cooperate in the self medication. Once these factors were ascertained, teaching the injection routine and mixing could be done essentially as it is in most clinics or physicians' offices in training diabetic patients to give their own insulin. A home visit by a nurse would be unnecessary. Patients should at first return frequently enough to their physicians for them to be certain that all was going well. Patients must be warned not to increase the amount or frequency of the injections and to return to the clinic at any change in the state of well-being.

SUMMARY

This study is concerned with the training of patients who require regular injections of a mercurial diuretic for the maintenance of compensation to make their own injection of mercaptomerin sodium subcutaneously, the drug having been found to be effective when given by this route. There is a medical precedent for such a plan with respect to self injections, since diabetic patients are trained to give their own insulin, this procedure forming a fixed part of the program of care of diabetic patients.

A total of 1,425 subcutaneous injections of mercaptomerin sodium have been self administered during a five month period by 71 ambulatory patients with cardiac disease. An average of two teaching sessions was required by the majority of patients to learn the procedure. The instructions in sterilization, injection and mixing of the drug have been well followed. Patients administered their own injections according to the schedule recommended by their clinic physicians, time between injections varying from twice a week to once every two weeks. One to 2 cc. of the drug was required. The patients returned to the clinic at two week to monthly intervals.

Diuresis occurred, weights remained constant and compensation was maintained. There was no greater incidence of deterioration of cardiac compensation than in the clinic patients who came to the clinic for all mercurial injections and were seen by physicians at each visit. There were no instances of acute cardiac failure or deterioration of cardiac status attributable to improper or inadequate administration of mercaptomerin sodium.

In most patients and after most injections there were no untoward reactions of any kind. In a certain number of patients transient local discomfort followed injections, and occasionally a nodule formed at the injection site. These nodules were not severe enough to warrant discontinuance of the regimen. The incidence of local infection in 1,425 injections was low, namely five. Small areas of necrosis of the skin from intradermal injection occurred only three times in the 1,425 injections.

The limitations preventing training of patients for self injection are aversion to the idea of self injection, mental incompetence and physical disability. Nineteen patients who were given preliminary instruction fell into these categories of limitation, leaving 71 who participated fully.

Patients benefited financially by eliminating some visits to the clinic or doctor and also saved time by self administration. The amounts of time and money saved depended on the number of visits that could be omitted.

Benefit to the clinic resulted from the reduction in its routine work. Time of the medical, nursing and secretarial staffs of the clinic were saved.

Our successful experience with this program leads us to the opinion that widespread adoption of the self-injection regimen should be encouraged, and it should find more extensive application in patients whose mercurial diuretic requirements are fairly stable and in patients who are suitable for such a program.

Air Transport of Pregnant Women.—Journey by air is the smoothest form of travel and there is far less chance of motion sickness or injury to the mother or foetus occurring from bumps and jerks than in any other form of public transport. Most airlines accept pregnancy cases up to the eighth month, provided they are in good health, but recommend that oxygen be available, whether or not the aircraft is pressurized. The limit is placed at the eighth month, so as to avoid, as far as possible, births in flight, which are not in the interests of mother or child and which throw an undesirable and unwarranted responsibility on the captain of the aircraft and crew, especially the stewardess . . . Such tests as have been done with the aid of a low-pressure chamber tend to confirm observations made along airlines to the effect that those in the later months of pregnancy are apt to suffer from lack of oxygen (anoxia) more readily than usual at altitudes over 8,000 feet, some even at 5,000 feet, owing to dyspnea from increased intra-abdominal pressure. It has been suggested that this degree of anoxia tends to stimulate uterine contractions and induce labour, but there is insufficient evidence to support this contention.—Sir Harold E. Whittingham, *Practitioner*, February 1951.

CLINICAL NOTES

RESECTION OF LEFT LOBE OF LIVER FOR BENIGN HEMANGIOMA

William A. Altman, M.D., Dallas, Texas

Sixty-eight cases of resection of the entire left lobe of the liver for hemangiomata have been described in the literature, and this case is reported in order to add another to that series.[1]

REPORT OF CASE

The patient, a 33 year old white woman, underwent exploration four years previously because of a large mass in the left upper quadrant, which had been present for at least 15 years. At the operation, four years previously, the tumor was thought to be malignant, but a biopsy revealed it to be a benign cavernous hemangioma. The patient was given an undetermined amount of x-ray therapy for two months following the operation, and there had been little or no change in the size of the tumor mass. The history revealed no serious complaints except for a heavy, dull aching feeling in the left upper quadrant of the abdomen.

The patient was in excellent general health. The general physical examination revealed no abnormalities except the abdominal mass, which extended approximately 15 by 20 cm. below the left rib margin and was firm, irregular and nontender. The mass descended with respiration. The only significant laboratory findings were a red blood cell count of 3,160,000 and a hemoglobin value of 64 per cent. The result of urinalysis was normal. The results of blood chemistry and liver function studies were all normal.

The operation was carried out with the patient under nitrous oxide-ether anesthesia. A high left rectus incision was made, removing the old operative scar. The left lobe of the liver was greatly enlarged, approximately 25 or 30 cm. in diameter, and covered with very large tortuous vessels. The falciform ligament was severed about 1 cm. from the diaphragm. Then the left suspensory ligament of the liver, holding the left lobe to the diaphragm, was severed. After the liver was freed and the left lobe delivered into the wound, the umbilical fissure was transfixed with many interrupted, overlapping no. 0 chromic surgical gut ligatures. A second row of overlapping interrupted ligatures was placed 1 cm. distal to the first row. Then the left lobe of the liver was removed, dividing the liver between the two rows of interrupted sutures.

Palpation of the right, quadrate and caudate lobes of the liver revealed no involvement with the hemangioma. The gallbladder was normal and no stones were palpated.

One absorbable gelatin (gelfoam®) sponge was left in the liver bed where there was a very small amount of oozing. The portion of the falciform ligament that remained on the liver was then sutured over the raw end of the liver, and several interrupted sutures were taken in the falciform ligament and diaphragm to suspend the liver to it. The wound was closed in layers.

The patient was given 1,000 cc. of blood during the operation because of her preexisting anemia, but this would not have been necessary for the blood loss. The vessels were so well controlled before excision of the left lobe of the liver that she lost practically no blood at all.

Pathology Report.—The left lobe of liver weighed 2½ pounds (1.1 Kg.) and measured 16 by 15.5 by 7.5 cm. Its serosal surface showed multiple firm fibrous adhesions. In one area there was a small fragment of lobulated fat attached. On the cut surface there were multiple surgical gut sutures approximating liver parenchyma. On section, the liver mass was filled with blood and decreased markedly in size after it was sectioned. Within the liver parenchyma there were numerous grayish yellow fibrinous nodules which appeared to be partly undergoing organization. No normal-appearing liver parenchyma was seen. The tissue was suggestive of hemorrhagic edematous lung rather than liver.

Sections from the liver showed almost complete replacement of liver parenchyma tissue by a vascular structure having numerous lumens filled with red blood cells. The walls of vascular structures were common to numerous lumens, giving the structure a cavernous appearance. The liver parenchyma tissue was scattered within the vascular structures and occupied approximately one fourth, by volume of tissue space. In focal areas there were fibrotic structures which appeared to be the organization of previous infarcted areas within liver parenchyma. No malignant change was seen.

The patient had an uneventful convalescence and was dismissed from the hospital on the eighth day after the operation.

This case well illustrates the ease with which the left lobe of the liver can be resected if careful steps are taken with the through and through, overlapping, interrupted chromic ligatures to isolate the resection line from the vascular liver. This same technique is applicable to the resection of other tumors of the liver.

202 W. Tenth St.

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[1] Picknell, K. L., and Clay, R. C.: Lobectomy of the Liver: Report of 3 Cases, Arch. Surg. 48: 267-277 (April) 1944. Bockus, H. L., and others: Gastro-Enterology: Diagnosis and Treatment of Disorders of the Liver, Gallbladder, Biliary Tract and Pancreas, Philadelphia, W. B. Saunders Company, 1946, vol. 3, chap. 93, p. 354.

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. Stormont, M.D., *Secretary.*

Terramycin Hydrochloride.—Terramycin is an antibiotic isolated from the elaboration products of the actinomycete Streptomyces rimosus when the microorganism is grown on suitable culture media. The crystalline hydrochloric acid salt is formed by the reaction of the free base, terramycin, with hydrochloric acid.

The assay for the potency of terramycin hydrochloride employs the same test organism and media as recommended by the Antibiotic Division of the U. S. Food and Drug Administration for the turbidimetric assay of streptomycin (Federal Register, October 28, *1948*; Section 141.101, paragraph J.). The manufacturer also employs a colorimetric method wherein the transmittancies of the test solution and a house standard are compared.

The determination of the toxicity of water-soluble terramycin salts is similar to that used for sodium penicillin as described in the U. S. Food and Drug Administration Regulations for Tests and Methods of Assay of Antibiotics and Antibiotic-Containing Drugs, Section 141.4, except that 0.3 ml. of a 5,000 micrograms per ml. aqueous solution of terramycin hydrochloride is used.

Actions and Uses.—Terramycin hydrochloride exercises bacteriostatic or bactericidal effect, depending on its concentration. It is active in vitro against certain strains of Beta hemolytic streptococci, Alpha hemolytic streptococci, nonhemolytic streptococci, pneumococci, staphylococci, Escherichia coli, Aerobacter aerogenes,Klebsiella pneumoniae, Hemophilus influenzae and a number of other microorganisms. It is not very effective in this respect against certain strains of Pseudomonas aeruginosa or Bacillus proteus. Infections produced in embryonated eggs by members of the rickettsial group and by certain viruses are controlled by the drug. Terramycin hydrochloride has therapeutic action in experimental Beta hemolytic treptococcic or pneumococcic infections in mice, but is less ffective than aureomycin. In experimental infections produced n mice by K. pneumoniae, it is slightly more effective than ureomycin or chloramphenicol.

Terramycin hydrochloride has proved effective in the clinical reatment of Rocky Mountain spotted fever, typhus, scrub yphus, primary atypical pneumonia, pneumococcic pneumonia, taphylococcic infections, Beta Hemolytic streptococcic infecions, brucellosis and urinary tract infections produced by cerain strains of E. coli, A. aerogenes, streptococci or staphyloocci. It is not very effective for treatment of infections produced by Ps. aeruginosa, B. proteus, or organisms of the Salmonella group, and it is not effective in typhoid fever therapy. Although terramycin is beneficial in syphilis and gonorrhea, penicillin is the antibiotic of choice for the treatment of these infections. Terramycin may be used pre- and post-operatively in surgical procedures on the large bowel to suppress the normal colonic bacterial flora.

Suitably buffered preparations of terramycin hydrochloride may be used locally in the eye against certain ocular infections produced by susceptible bacteria. Terramycin hydrochloride is effective when applied topically in the treatment of early acute trachoma, but appraisal of its efficacy in comparison with other agents and in the later stages of this disease requires longer experience. The role of the drug in the control of other virus infections of the eye is being evaluated. A preparation of terramycin hydrochloride for intravenous administration is available for use in severe illnesses susceptible to the drug. Terramycin produces nausea, vomiting, diarrhea, skin rashes or drug fever in some patients. Because it actively suppresses the growth of many bacteria, terramycin permits their replacement by growths of yeast-like organisms; thus thrush or other forms of moniliasis may develop in patients receiving the drug.

Dosage.—Exact dosage schedules for terramycin are still being studied. It is recommended at present that moderately ill patients be given a daily oral dose based on 25 mg. per kilogram of body weight, while patients with severe illness may receive a total daily dose based on 50 mg. per kilogram of body weight. This total daily dose is administered in divided doses at six hour intervals. The total daily oral dose for infants and children is lower than in adults. In severe illness usually 40 mg. per Kg. of body weight is considered adequate.

For most acute infections 0.5 to 1.0 Gm. daily, administered intravenously every 12 hours, is considered adequate. In extremely severe infections a daily dosage not to exceed 2.0 Gm. may be used. In infants and children a total daily intravenous dose of 10 mg. to 20 mg. per Kg. of body weight can be administered. Intravenous therapy should not be used beyond the point at which the patient can accept oral medication, nor should the intravenous route be employed in the treatment of mild infections. The drug should not be administered subcutaneously or intramuscularly, but in highly localized infections, which cannot be penetrated by the blood stream, small quantities may be injected directly into the infected area.

Chas. Pfizer & Company, Inc., Brooklyn. U. S. Patent 2,516,080.

Capsules Terramycin Hydrochloride: 50, 100 and 250 mg.

Elixir Terramycin Hydrochloride: 30 cc. bottles. A flavored alcohol solution containing the equivalent of 50 mg. of terramycin as the hydrochloride in each cubic centimeter. The terramycin hydrochloride and diluent are packaged together in separate containers, to be mixed before use.

Terramycin Hydrochloride (Intravenous): Vials containing the equivalent of 0.25 gm. and 0.5 gm. of terramycin as the hydrochloride. Buffered with 0.23 gm. and 0.45 gm. of sodium glycinate, respectively.

Ophthalmic Ointment Terramycin Hydrochloride: 3.54 gm. tubes. An ointment containing 1 mg. of terramycin as the hydrochloride in each gram.

Ophthalmic Solution Terramycin Hydrochloride: Bottles containing the equivalent of 25 mg. of terramycin as the hydrochloride with 62.5 mg. of sodium chloride. Buffered with 25 mg. of sodium borate. To be diluted with 5 ml. of distilled water.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

REPORT OF THE COUNCIL

The Council on Physical Medicine and Rehabilitation has authorized publication of the following report.

The Council wishes to express its appreciation for the valuable cooperation of the Advisory Committee on Audiometers and Hearing Aids for its expert services. The Committee members are Drs. Gordon Berry, Richard K. Cook, Hallowell Davis, Kenneth M. Day, Edmund P. Fowler, Isaac H. Jones, Dean M. Lierle, M. H. Lurie, Douglas Macfarlan and C. Stewart Nash.

Howard A. Carter, *Secretary.*

MINIMUM REQUIREMENTS FOR ACCEPTABLE PURE TONE AUDIOMETERS FOR DIAGNOSTIC PURPOSES

An audiometer is a device used to measure sensitivity of hearing. The particular type of audiometer with which this specification is concerned is the pure tone audiometer designed for general diagnostic use with individual subjects. This specification has been prepared with the objective that the measurements obtained on any audiometer shall truly represent a comparison of a person's auditory threshold at prescribed frequencies with the corresponding normal thresholds. A hearing test of a given person on all audiometers designed in accordance with the standards should yield substantially the same results when performed under similar conditions of ambient noise.

The normal threshold of hearing at a given frequency is the modal value of the minimum sound pressure, at the entrance to the external auditory canal, which at that frequency produces a sensation of pitch in a large number of normal ears of persons in the age group from 18 to 30 years, inclusive. The threshold of hearing is measured by presenting tones of successively greater or less intensity to a listener.

1. GENERAL REQUIREMENTS

(*a*) The audiometer shall be an electroacoustic generator, with associated earphone and bone conduction receiver, which provides pure tones of selected frequencies covering a considerable portion of the auditory range. The frequency and intensity shall be controllable. A device for interrupting the tone shall be provided.

(*b*) The audiometer shall operate by electrical power from one or more of the following sources: battery power supply, direct current at line voltage of 117 volts and alternating current at 60 cycles per second and 117 volts, or such supply as regional requirements demand. Tests for compliance with the requirements of section 2 shall be made at line voltages of 105 and 125 volts or at the extremes of the usable range of battery voltages recommended by the manufacturer or at the voltage required by regional demands. Tests for compliance with the requirement of sections 3, 4, 5, 6 and 7 shall be made at a line voltage of 117 volts or at the battery voltage recommended as operating voltage by the manufacturer.

(*c*) In a battery-operated instrument some means of determining when the loaded limiting battery voltage has been reached must be provided.

(*d*) The audiometer shall have a nameplate giving the manufacturer's name, the serial number, the voltage and frequency (or frequencies) of the power supply, and the power consumed by the audiometer.

(*e*) A spring headband shall be provided to hold the earphone or earphones firmly against the ear. Cushions and/or other coverings for the earphone and the spring tension shall be designed with due consideration of (1) acoustic seal, (2) comfort, (3) ease of rapid and accurate placement and removal, (4) ease of cleaning and (5) maintenance of the proper size of cavity for which the earphone is calibrated. If only one earphone is provided, a dummy earphone with proper cushion or covering to cover and close the opposite ear shall be provided and suitably marked. The headband shall be easily and rapidly adjustable to fit the heads of adults or children.

2. FREQUENCIES

(*a*) The audiometer shall produce at least the following definitely identified frequencies: 125, 250, 500, 1,000, 2,000 and 4,000 cycles per second for both air and bone conduction measurements, and also 8,000 cycles per second for air conduction measurements. Dials shall be marked so that frequencies in cycles per second can be easily read.

(*b*) Each frequency generated by the audiometer shall have a value within ±5.0 per cent of the corresponding frequency reading.

3. INTENSITY INTERVAL AND INTENSITY RANGES FOR AIR CONDUCTION

(*a*) The readings of the intensity dial or scale shall be hearing loss readings, i. e., when the intensity dial is set at zero the intensity of the tone produced shall be at the normal threshold of hearing for that frequency as defined in section 4*a*, and other readings shall indicate the ratio, expressed in decibels, of the intensity of the test tone to the corresponding normal threshold of hearing. Values of hearing loss for air and for bone conduction shall be clearly differentiated.

(*b*) Hearing loss readings shall extend from 10 decibels below threshold by intervals of 5 decibels or less up to at least the values given in table 1.

TABLE 1.—*Value for Hearing Loss Readings*

Frequeney Reading in Cycles per Second	Hearing Loss Readings in Decibels Above Normal Threshold
125	65
250	80
500	85
1,000	95
2,000	95
4,000	90
8,000	75

(*c*) At each of the foregoing frequencies the measured difference (in decibels) of the intensity levels corresponding to any two graduations of the intensity dial shall agree with the indicated difference in hearing loss readings within 1.5 decibels. Thus for a 5 decibel interval on the intensity dial, the measured difference in intensity levels shall not be less than 3.5 decibels or more than 6.5 decibels. The difference in the intensity levels shall be determined by measurement of the voltage levels at the input of the earphone with the earphone coupled to the National Bureau of Standards Coupler 9-A or its acoustic equivalent.[1]

4. SOUND-PRESSURE OUTPUT OF THE EARPHONE

(*a*) The sound-pressure produced by the earphone at each hearing loss reading shall not differ from the indicated value, as referred to normal threshold, by more than 4.0 decibels at the indicated frequencies of 125, 250, 500, 1,000 and 2,000 or by more than 5.0 decibels at 4,000 and 8,000 cycles per second. Measurements of sound-pressure output shall be made with the earphone coupled to the National Bureau of Standards Coupler 9-A or its acoustic equivalent. The sound pressures in Coupler 9-A corresponding to normal threshold have been determined by the National Bureau of Standards for several types of earphones. For other types the methods of comparison advised by the National Bureau of Standards or specified by the American Standards Association, Inc., shall be employed. When an audiometer is submitted for acceptance the manufacturer shall inform the Council what type of earphone is employed. For Western Electric Type 705-A earphone the threshold pressures, determined by loudness balancing with the earphones used in the National Health Survey Hearing Study, are given in table 2.

TABLE 2.—*Threshold Pressures for Western Electric Type 705-A Receiver*

Frequency in Cycles per Second	Root-Mean-Square Sound Pressure in Decibels Above 1 Dyne/Cm.²
125	−19.5
250	−31.4
500	−49.2
1,000	−57.3
2,000	−57.0
4,000	−58.9
8,000	−52.1

(*b*) The normal thresholds for any indicated frequencies other than those listed in table 2 shall be obtained by graphic interpolation on a smooth curve drawn through the normal threshold values determined by the National Bureau of Standards for the appropriate type of earphone. If the National Bureau of Standards performs such an interpolation, the values which it derives shall be employed. If additional frequencies between 125 and 8,000 cycles per second are indicated as test frequencies, the standard of accuracy established in the first sentence of this section shall be maintained, i. e., ±4.0 decibels relative to the values given by the National Bureau of Standards for frequencies of 2,000 cycles per second or less and ±5.0 decibels for frequencies above 2,000 cycles per second. The manufacturer shall indicate clearly on the instrument that hearing loss readings for frequencies above 8,000 cycles per second are only rough approximations.

(*c*) The sound-pressure produced by the receiver at each specified frequency when the instrument is set to the 60 db. hearing loss readings shall not vary by more than ± 1 db. if the line voltage is varied through the range from 105 to 125 volts.

(*d*) The sound-pressure output of an audiometer shall be measured directly at the hearing loss settings of 60 decibels. It shall be measured with the receiver coupled to the National Bureau of Standards Coupler 9-A or its acoustic equivalent. If appropriate apparatus is available for measuring acoustic pressure down to 40 db. or less above 0.0002 dyne per square centimeter, the direct measurement of acoustic pressure is the preferred method for obtaining the sound-pressure output at other hearing loss settings. An alternative method is to combine the pressures measured at 60 decibels with the results of the measurements of hearing loss intervals.

(*e*) If two or more earphones, substantially similar in appearance and interchangeable in their connections, are furnished with a pure tone audiometer, each earphone must meet the "minimum requirements" even when connected to either output, if two outputs are provided. If a clear color code or else a connector that will not allow connection of an earphone to the wrong circuit is provided, the output of each earphone need meet the specifications of Section 4 only when the earphone is connected to its intended circuit.

5. PURITY OF TEST TONES OF THE EARPHONE

The sound pressure of the fundamental signal shall be at least 25 decibels above that of any harmonic when measured with the earphone coupled to the National Bureau of Standards Coupler 9-A or its acoustic equivalent. The harmonics shall be measured at the frequencies and hearing loss settings listed in section 3b, even though the manufacturer may provide a maximum intensity higher than is specified in that section.

6. NOISE

(*a*) The root-mean-square weighted sound pressure due to all frequencies except the signal frequency and its harmonics shall be either less than 1.0 by 10^{-3} dyne per square centimeter or at least 60 decibels below the sound pressure due to the signal frequency and its harmonics at all specifically designated frequencies and hearing loss dial settings. This measurement shall be performed with the interrupter switch in the "off" position. The other conditions of this measurement and the relative weights employed in the calculation shall be those specified by the American Standards Association, Inc., for this purpose (American Standard Z24.9-1949 and American Standard for Audiometers for General Diagnostic Purposes, if and when adopted).

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[1] The National Bureau of Standards Coupler 9-A has been used by audiometer manufacturers and the National Bureau of Standards as a standard coupler for many years. Its volume is approximately 6 cc. Recently the American Standards Association, Inc., has issued American Standard Z24.9-1949, in which a coupler designated American Standards Association Type 1 is recommended. Adaptation of the American Standards Association Type 1 Coupler, or of any other coupler, to the different earphones supplied by audiometer manufacturers involves research, and consequently the issuance of this standard would be delayed by one or more years, if any coupler other than No. 9-A were to be incorporated into the standard. The American Standards Association, Inc., plans to rewrite American Standard Z24.9-1949 as soon as the basic research has been completed. The industry and the requirements of the Council on Physical Medicine and Rehabilitation will then change gradually from the National Bureau of Standards Coupler 9-A to a standard coupler approved by the American Standards Association. The phrase "or its acoustical equivalent" in the present requirements is intended to include any standard coupler approved by the American Standards Association as a substitute for or replacement of the National Bureau of Standards Coupler 9-A.

(*b*) If an audiometer is provided with two or more earphones the signal in any earphone for which the switch is set to "off" should be at least 10 db. below the normal threshold for a signal of that frequency. This test should be applied, by a listener (or listeners) with appropriately acute hearing, with the audiometer set for 60 db. hearing loss and at all of the frequencies specified in Section 2.

(*c*) Neither the bone conduction receiver nor any other part of the audiometer shall radiate sound to such an extent that the sound reaching the tympanum through the auditory meatus might influence the validity of the bone conduction measurement. As judged by an observer with normal hearing, the sound received at the ear by air radiation from the audiometer shall have a sensation level at least 5 decibels below the level which the receiver generates by bone conduction when in contact with the head.

This test of sound radiation from the bone conduction receiver shall be performed by determining the bone conduction threshold in the usual way, and then, with the bone conduction receiver held in approximately the same position as in the threshold measurement, but with the driver element or contact area of the receiver resting on the soft flesh at the end of the operator's finger and with coverage comparable to that provided by contact with the mastoid, the threshold at which any auditory sensation is perceived shall be noted. Care must be taken that no direct contact be made between the finger and skull. The threshold of auditory sensation shall be at least 5 decibels above the direct bone conduction threshold. A jury of at least six persons with hearing losses for air-borne sound not greater than 10 decibels at the frequencies employed shall perform the test and the mean of their results taken. The above test is not required at frequencies above 2,000 cycles per second.

7. TONE INTERRUPTER

An audiometer shall be equipped with a device for turning the tone on and off without introducing an objectionable click (i. e., transient extraneous frequencies, audible to a normal ear) in the receiver.

8. AUDIOGRAM BLANKS

If the manufacturer supplies with his instrument blanks for plotting measured hearing losses, these blanks shall comply with the following specifications: The blank shall be ruled with rectangular coordinates, with frequencies in cycles per second on a logarithmic scale as the abscissas and hearing loss in decibels on a linear scale as the ordinates. Frequencies shall be shown by vertical lines equally spaced at octave intervals. (For an instrument that produces test tones at intermediate frequencies, vertical lines to correspond to these frequencies should appear at the proper fractional parts of the octave intervals.)

Normal hearing for both air-borne and bone-conducted sounds shall be indicated by a single horizontal line marked 0 (zero), near the top of the blank. "Hearing loss in decibels" shall be indicated by horizontal lines, equally spaced at 10 decibel intervals and numbered downward from the 0 line. One octave on the frequency scale shall be the same distance as 20 decibels on the hearing loss scale.

9. SHOCK HAZARD

Audiometers shall be free from electric shock hazard. A shock hazard shall be considered to exist at an exposed live part if the open circuit potential is more than 25 volts and the current with a 1,500 ohm load is more than 5 millamperes.

10. GUARANTIES

The manufacturer shall make to the purchasers the following guaranties:

(*a*) Any defect other than those due to accident or damage from improper use that may appear within a period of one year from date of purchase will be corrected and the instrument recalibrated at no cost to the purchaser except for transportation charges; replaceable parts which may deteriorate with use, such as vacuum tubes, shall, by agreement, be supplied at reasonable cost.

(*b*) The maker will provide adequate instructions for the proper care and upkeep of his products and will encourage the purchaser to send his audiometer at reasonable intervals to the factory or to a qualified distributor for check as to performance and needed servicing at a reasonable cost.

11. MARKETING AND ADVERTISING

Rules of the Council on Physical Medicine and Rehabilitation shall be adhered to by manufacturers of acceptable audiometers.

Recommendations for Pure Tone Audiometers for Diagnostic Purposes

The following features are not required, but they are recommended for the guidance of manufacturers.

1. GENERAL

(*a*) Two earphones should be provided, and a switch on the operating panel that allows the operator to transfer the test tone from one ear to the other. Each of the two earphones should meet the requirements for accuracy of sound-pressure output.

(*b*) A battery-operated instrument should be provided with a device that will insure that the batteries are turned off when the instrument is closed or covered for transportation.

2. FREQUENCIES

If test tones in addition to the series 125, 250, 500, 1,000, 2,000, 4,000 and 8,000 are provided, the preferred frequencies are 1,500, 3,000, 6,000 and 12,000.

3. TONE INTERRUPTER

(*a*) The interrupter should operate either as normally "on" or normally "off" at the choice of the operator.

(*b*) The acoustic output should reach a level within 1 db. of its final level not sooner than 0.01 second and not later than 0.5 second after the interrupter switch is operated for "on." The output should not overshoot its final level by more than 1 db. The test tone should decay at least 20 db. and preferably more within 0.5 second after the interrupter switch is operated for "off."

4. BONE CONDUCTION THRESHOLDS

(*a*) A spring headband or other device for regulating the force of application of the bone conduction receiver to the mastoid is highly desirable.

(*b*) A recommended procedure for establishing the normal threshold of hearing for bone-conducted sound as measured by a particular audiometer is as follows: Determine at each frequency the intensity level, as measured by the hearing loss setting of the audiometer, which can just be heard when the bone conduction receiver is pressed firmly against the mastoid just back of the ear of each of 6 subjects with hearing losses at the frequencies employed of not more than 10 decibels by air conduction. The ear canal shall not be occluded during these measurements. The mean of the six measurements at any frequency is taken as the normal threshold for bone-conducted sound of that frequency. All measurements specified in this section are to be made in a room free from extraneous sound of sufficient intensity to vitiate the measurements. Acceptance tests on this requirement may follow the same procedure.

5. MASKING NOISE

Provision for masking noise is highly desirable. The noise should have a wide acoustic spectrum, at least from the lowest to the highest frequencies indicated for measurement of hearing loss by bone conduction. The noise should be delivered to the ear through an earphone and the intensity should be calibrated over a range of effective masking of at least 40 decibels. The loudest level should be about 60 db. above the level that in a normal ear will just mask a tone of threshold intensity at 1000 cps. (table 2). An intensity scale showing relative levels at five decibel intervals should be provided.

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THE NATIONAL FUND FOR MEDICAL EDUCATION AND THE AMERICAN MEDICAL EDUCATION FOUNDATION

Tremendous impetus was given to the movement to raise funds from private sources for the nation's medical schools by the public announcement on May 16, 1951, of the establishment of the National Fund for Medical Education. This important new organization is sponsored by outstanding leaders from the fields of public affairs, business, industry, agriculture, labor, higher education, and by the American Medical Association and the Association of American Medical Colleges. Its board of 66 distinguished trustees from all parts of the country has as honorary chairman former President Herbert Hoover and as president Mr. S. Sloan Colt, the president of Bankers Trust Company, New York. Its 20 man advisory council is comprised of leading university presidents and members of the Council on Medical Education and Hospitals of the American Medical Association and of the executive council of the Association of American Medical Colleges.

The objective of the Fund is to raise annually from voluntary sources substantial sums for the support of the nation's medical schools. Emphasis will be placed on securing contributions from corporations and organized groups, which, it is recognized, have to a large extent replaced individuals as the great potential sources of philanthropy in this country. The Fund has set a goal of $5,000,000 to be raised during its first year.

This expanded program to raise funds for the medical schools does not lessen in any way the urgent need for the medical profession's continuing its efforts through the American Medical Education Foundation. On the contrary, the profession's effort should be so vigorous and so successful as to constitute a challenge and example for all other groups.

At the annual meeting of the sponsoring groups at which the announcement of the National Fund was made, Dr. Elmer Henderson stated (see page 262 of this issue of The Journal) that the directors of the American Medical Education Foundation had voted to distribute through the National Fund the contributions received by the Foundation. The Fund has already received contributions from 18 of the leading life insurance companies and from many prominent industrial corporations. Combining these contributions with the sums already raised by the American Medical Education Foundation, which now total more than $630,000, means that the National Fund will begin its activitie with resources of more than $1,000,000 already in hanc The Fund has announced that it plans to make its initi grants to the medical schools available immediatel With the guidance and assistance of the advisory counc referred to above, the trustees of the Fund have set u appropriate machinery for distributing the money equ tably among the nation's medical schools.

The story of the development of the National Fu for Medical Education is a thrilling demonstration how an idea can be translated into effective action. February 1948, at the Congress on Medical Educati and Licensure, President Alan Valentine of the Unive sity of Rochester, in discussing the financial crisis faci the nation's medical schools, suggested that the raisi of large numbers of small gifts could constitute one i portant method of meeting this crisis. In discussing t possibility, President Valentine said, "To inform a convince all American citizens of the needs of medi education will not be an easy or rapid achievement. suggest that it could be done by an organized and co tinuous campaign on a national scale." He also advise "Medical education should cultivate the friendship a further support of American business and industry

President Valentine's words made a deep impressi on the members of the Council on Medical Educati and Hospitals and became a topic of continuous discu sion during the months following his speech. In Jun 1948, this Council with the approval of the Board Trustees of the American Medical Association, su gested to the executive council of the Association American Medical Colleges that the two councils join consider the possibility of organizing a campaign on national scale of the type suggested by President Vale tine. This suggestion was enthusiastically endorsed, a a meeting of the two councils with a group of leade from business, industry, education, and the philanthrop foundations was held in New York City on July 2 1948. As a result of this meeting, a committee wa formed under the chairmanship of Mr. Earl Buntin managing director of the National Association of Manu facturers, to explore specific ways by which such a cam paign could be developed through the cooperative effor of the medical profession, the medical schools, busine and industry.

In the fall of 1948 a group of university president under the leadership of President Conant of Harvar and of General Eisenhower of Columbia, began ind pendently to explore the possibilities of developing similar campaign. When the two groups learned of eac other's activities, arrangements were made early in 194 for both groups to confer on the possibility of combinin forces. Agreement on a combined effort was quickl reached, and at this meeting was born the National Fun for Medical Education. Within the next few weeks large group of distinguished leaders in American li accepted invitations to serve as trustees, and the Fun was formally incorporated in the spring of 1949.

At the first meeting of the Fund's trustees, in Ma 1949, it was agreed that no public announcement of th Fund should be made until the Fund was fully organize and until a substantial nucleus of contributions had bee secured. Initial support to finance the organization an reliminary activities of the National Fund was provided by the following organizations: The American edical Association, The George F. Baker Trust, The arnegie Corporation of New York, The Commonwealth Fund, The Albert and Mary Lasker Foundation, he Lilly Endowment, The Josiah Macy, Jr. Foundaion, The John and Mary R. Markle Foundation, the avella Mills Foundation, The New York Foundation, he Sarah Mellon Scaife Foundation and the Rockefeller Foundation. To date the funds provided by these organizations have carried the entire administrative costs of the National Fund, making it possible for every dollar contributed to the Fund to flow directly to the medical schools. In the two years since the Fund was incorporated, its trustees and staff have worked methodically and tirelessly to lay the basis for a successful undertaking. The public announcement of the Fund earlier this week marks the end of the preliminary period devoted to organization and planning and the securing of ufficient initial support to insure its success. The Fund s now ready to enter its second phase, that of conducting an intensive campaign on a national scale to achieve its first year's goal of five million dollars.

In anticipation of the day when the medical profession would be called on to make its contribution to the National Fund along with business, industry, agriculture, labor, and others, the American Medical Association last December appropriated $500,000 as a nucleus for the amount to be raised by the medical profession in 1951. A few weeks later the Association sponsored the establishment of the American Medical Education Foundation to provide an instrument whereby individual physicians and state and county medical societies could make their contributions.

The campaign to raise funds from private sources for the medical schools has now been launched on a broad national basis. All organizations, groups and individuals throughout the country who have a concern for the welfare of the nation's medical schools have a vehicle through which they can make their contribution to solve the needs of the medical schools on a national basis. The character and accumulated experience and wisdom of the board of trustees and advisory council of the Fund and the breadth with which they represent American life assure that contributions to this Fund will be used wisely and effectively to promote the best interests of medical education and the country as a whole.

It may reasonably be estimated that if the National Fund and the American Medical Education Foundation can furnish the medical schools with five million dollars of additional operating funds during 1951, a solution will have been found to many of the schools' major problems. If double this sum can be raised, a not unreasonable goal for future years, the pressing needs of most schools, except for funds for construction, should be well met. These are realistic goals that the medical profession and the other influential groups in American society who are sponsoring the National Fund should be capable of meeting.

The medical profession is urged to make an immediate and intensive effort to make its total contribution to the 1951 fund a sum sufficiently large to indicate to all concerned that the profession recognizes and is willing to meet its responsibility in this combined effort to aid the medical schools. It is suggested that the profession should accept as its minimum goal for 1951 the sum of one million dollars.

In addition to making their own contributions, physicians can render important service to this effort by encouraging the officers of companies and corporations with whom they are acquainted to contribute to the National Fund.

Physicians should continue to make their contributions to the American Medical Education Foundation and send them to the Foundation at 535 N. Dearborn St., Chicago 10. A convenient subscription form together with additional information concerning the Foundation and the National Fund will be found on pages 32 and 33 of the advertising section of this issue of THE JOURNAL. Contributions to the Foundation will be turned over in lump sums to the National Fund, which, in an effort to keep its overhead expenses at a minimum, does not desire to assume the responsibility of handling individual contributions. Physicians may continue to designate the school to which they wish their contributions to go, since full and adequate provision for handling such requests and for notifying the schools of the names of contributors and the amounts contributed have been included in the arrangements between the National Fund and the Foundation.

Since most schools will begin their next fiscal year on July 1, 1951, it is the aim of both the National Fund and the Foundation to secure as much as possible of the 1951 fund for distribution to the schools by that date. The next six weeks, therefore, are important ones, and those physicians who have not already contributed to the American Medical Education Foundation are urged to do so within that period.

CONGENITAL SYPHILIS

The twenty-seventh Annual General Assembly of the International Union Against Venereal Disease[1] has drawn up several postulates regarding the mode of transmission of syphilis from parents to offspring: 1. Syphilis is transmitted from the mother to the offspring by the transplacental route. The passage of spirochetes across the chorionic villi takes place after the fifth month of pregnancy. 2. Direct infection of the ovum by the sperm is unlikely. 3. The so-called spirochetal granules represent a developmental stage common to all spirochetes. The assembly also recommended that the term "hereditary syphilis" be replaced by the term "congenital syphilis."

Levaditi and Vaisman,[2] although in agreement with the above postulates, point out that Mayer has reported two instances in which Treponema pallidum was found in the chorionic villi of an aborted fetus, one four months and one three months old. These, however, appear to be exceptional instances. Levaditi and Vaisman point out that Finger and Landsteiner injected spermatic fluid from a syphilitic patient into scarified skin of a Cynocephalus hemadrias and of a Macacus rhesus and observed formation of a chancre after three weeks. These experiments suggest that the spermatic fluid of a syphilitic patient may under certain conditions harbor a specific pathogenic virus for the monkey. Levaditi and his co-workers at the Institute Alfred-Fournier and Institute of Hygiene (Paris) demonstrated that the testis, the tunica albuginea, the epididymis and the sperm of rabbits rendered syphilitic by the corneal route may contain, in the absence of any microscopic alteration of these tissues and of the spermatic fluid, a syphilitic virus as demonstrated by corneal injections into other rabbits. The spermatozoa of rabbits infected with syphilis of long standing proved capable of transferring the infection after incubation periods of 51 to 73 days. These authors conclude that the parenchyma of the testicle and of the testicular adnexa, rarely in man but frequently if not constantly in the rabbit, harbors a syphilitic virus demonstrable by transference to a rabbit or a monkey.

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[1] Union Internationale contre le Péril Vénérien, XXVII^e Assemblée Générale Annuele, Zurich, 28 juillet-1^er août 1950, La Prophylaxie Antivénérienne 22:513 (Nov.) 1950.

[2] Levaditi, C., and Vaisman, A.: La Transmission de la Syphilis des Procréateurs aux Rejetons, Presse méd. 59:201 (Feb. 17) 1951.

It has not been possible to demonstrate typical spirochetes in the sperm, the seminal glands and testicular appendages of man, despite the demonstrated specific virulence of these tissues. It has been suggested, therefore, that these tissues harbor a syphilitic virus beyond the capacity of a microscope to disclose. The germinal transmission of syphilis from the male parent to the offspring appeared to be at least hypothetically possible.

The connective tissue of the ovary and of the ovocytes of infants born to syphilitic mothers were frequently found to be invaded by spirochetes. The spirochetal invasion of the ovocytes of newborn syphilitic offspring, however, does not offer an argument either for or against germ infection. The case probably is one of massive spirochetal septicemia, the ovary being infected much as the rest of the organs of the fetus. The fact that an ovocyte may be penetrated by a spirochete does not establish that this may actually occur at the moment of fecundation.

The question of the existence of a developmental cycle of the syphilitic virus was suggested by the finding of the so-called spirochetal granules. A number of investigators have called attention to the existence of these granules, which can be demonstrated with the electron microscope. Hampp and his associates [3] have demonstrated, with the aid of an electron microscope, the presence of internal granules, end granules and external granules in various types of spirochetes, including those of two cultured strains of Treponema pallidum. The electron micrographs, according to these investigators, demonstrate that free granules are definitely a phase in the development of spirochetes. The free granules consist for the most part of what appear to be short sections of spirochetes closely packed together. Levaditi and Vaisman believe that the developmental cycle of the syphilitic virus consists of successive phases oscillating between the ultramicroscopic state and that of the spiral form. The granules may represent a latent stage that assures the preservation of the virus during the interval required for the development of a florid infection. This in turn suggests that infection of spermatozoa and of ova by the virus in the stages difficult of demonstration is at least probable.

The placental transmission of the maternal spirochetes and the infection that follows it in the offspring are matter of common observation. There is as a rule a ma sive invasion of the fetal and maternal placenta ar particularly of the liver of the fetus by the matern spirochetes. The specific infectivity of the parents, p ticularly that of the mother, is not, however, incompa ble with an apparently normal offspring. The spirochet are rarely found in the organs of a fetus of less th five months. This fact suggests that the virus is not cap ble of passing the placental barrier until a late stag namely, at the moment when this barrier has undergo certain anatomic and biologic changes. Such chang have been established by histological studies. They a to be noted in the chorionic villi after the fourth ar the fifth month, particularly in the cells of Langhai and in the syncytium. These changes are in the natu of involution. The formation of definite gaps in the vil probably favors the passage of the spirochetes across th placental barrier.

DETERMINATION OF GASTRIC ACIDITY WITHOUT INTUBATION

Segal and his associates recently described a test fo determining the presence or absence of free hydrochlori acid in the stomach without subjecting the patient t intubation.[1] The principle of the test lies in the use of cation exchange resin to which is attached a special indicator cation that can be readily identified when it is released from the compound by an ion exchange reaction. Clinical trials have been based on administration of quininium exchange indicator compound prepared by subjecting an acid-conditioned cation exchange resin t a solution of quinine hydrochloride. By this treatment, quinine replaces the hydrogen cations of the carboxyli acid groups present in the resin. If free hydrochloric acid is present in the stomach, the quinine will be replaced by hydrogen ions and the liberated quinine will be absorbed into the body and can later be detected in the urine. Smaller amounts of quininium cations may be displaced by the cations present in the secretions of the small intestine. However, these quininium cations can be differentiated from those displaced by the hydrogen ions in gastri juice by the time of appearance and the amount of quininium cations in the urine.

This procedure is more pleasant for the patient than the conventional intubation method. Its simplicity suggests its usefulness as a screening test to select achlorhydric subjects in the gastric cancer age group for further investigative studies.

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[3] Hampp, E. G.; Scott, D. B., and Wyckoff, R. W. G.: Morphologic Characteristics of Certain Cultured Strains of Oral Spirochetes and Treponema Pallidum as Revealed by the Electron Microscope, J. Bact. 56: 755 (Dec.) 1948.

[1] Segal, H. L.; Miller, L. L., and Morton, J. J.: Proc. Soc. Exper. Biol. & Med. 74: 218 (May) 1950. Segal, H. L.; Miller, L. L.; Morton, J. J., and Young, H. Y.: Gastroenterology 16: 380, 1950. Segal, H. L.: M. Clin. North America 35: 593 (March) 1951.

ORGANIZATION SECTION

RESOLUTIONS TO BE PRESENTED TO HOUSE OF DELEGATES

The Secretary of the Association has been informed that the following resolution will be introduced in the House of Delegates at Atlantic City by Dr. James P. Wall, delegate from Mississippi:

RESOLUTION ON DEATH OF DR. ROY W. FOUTS

Life, with its ever changing cycle, brings experiences of varied kinds—some fraught with gladness, others laden with sadness. Man has a time to come and a time to go, yet his tenure is commensurate not with years spent, but rather in deeds wrought. In the course of human events the passing from God's footstool is to be expected, and though mindful of the immutability of such a law, mere mortals are never prepared for the inevitability of this denouement. It is true that posthumous glory soon sinks into forgetfulness, it is equally true that a good man lives long after he has dropped into the tongueless silence of a dreamless sleep.

An estimate of one's character is very apt to be biased by personal relation and association, and a true evaluation is merged into the maze of circumstance and lost in the exigencies of time. Nevertheless, there has come to this House of Delegates the grim realization that it suffered a great sorrow when death came, as it must come to all, to Dr. Roy W. Fouts on March 27, 1951.

Dr. Fouts was all the term "gentleman" connotes. Gentle, without fear; meek, without repining; modest, without prudery; gifted, without pedantry and friendly, without effusion. No one ever had the temerity to question his motives, impugn his integrity, asperse his character or doubt his courage. Unswayed by popular clamor he kept the even tenor of his way, possessed of a fine intellect, a wonderful calmness, a rare poise, a kindly disposition, an unusual sense of humor, a clear understanding of his vocation and a due appreciation of the weightier matters of life.

As a member, Vice Speaker and Speaker of the House of Delegates of the American Medical Association, he was at all times considerate of the rights of others, fair in his rulings and impartial in the conduct of these offices. As Vice President of the American Medical Association, being a firm believer in the righteousness of its cause, he worked in and out of season to promote those standards that have made American medicine the standard of the world.

Though not unmindful that expressions of condolence often fall far short of their intended meaning and that many times words of sympathy are mere emptiness, this House, knowing Dr. Fouts as it did, knows it has suffered a great loss, and it is seeming and fitting at this time that it should take cognizance of the passing of our confrere; therefore be it

Resolved, By the House of Delegates of the American Medical Association in Annual Session in Atlantic City, New Jersey, June 11, 1951, that in the slipping away of Dr. Roy W. Fouts this body has lost a stalwart defender of its most precious tenets; organized medicine, a warrior worthy of his steel; the community an upright citizen, and the Healing Art, an exponent of whom it may truly be said: "He was a workman that needeth not be ashamed"; and be it further

Resolved, That a copy of these resolutions be forwarded to the family of our deceased comrade and friend.

The following resolutions will be presented by delegates of the Ohio State Medical Association:

RESOLUTION ON ABOLISHMENT OF "FELLOWSHIP" IN THE AMERICAN MEDICAL ASSOCIATION

Whereas, There is confusion, misunderstanding and criticism among many members of the American Medical Association regarding "Fellowship"; and

Whereas, In the opinion of many members, "Fellowship" is now unnecessary inasmuch as all active members of the American Medical Association are now provided with issues of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and permitted to attend sessions of the American Medical Association as a part of their membership privileges; and

Whereas, Many active members believe that payment of special "Fellowship dues" should not be required of an active member in order for him to become eligible to be a program participant or to serve in the House of Delegates or as an official of the American Medical Association; and

Whereas, The relationship between the American Medical Association and its members would be improved by establishing a single membership classification which would entitle all members to uniform and equal benefits and privileges; and

Whereas, The contention that "Fellowship" is necessary in order to give the American Medical Association certain control over matters of professional conduct and ethics is untenable for the reason that a physician who is unworthy of "Fellowship" is, and should be considered, unfit for membership; therefore be it

Resolved, That the House of Delegates of the American Medical Association in annual session in Atlantic City, June 11 to 15, 1951, favors the elimination of that classification of members known as "Fellowship" and instructs the Board of Trustees to prepare appropriate amendments to the Constitution and By-Laws for action by the House of Delegates at the next session of the American Medical Association.

RESOLUTION ON DISSEMINATION OF HEALTH INSURANCE NEWS

WHEREAS, Extension of voluntary health insurance is a most important part of the program of the American Medical Association; and

WHEREAS, Other groups active in this field have the advantage of coordination on a nation-wide level, while the medical profession's activities are planned and implemented in state and county medical societies; and

WHEREAS, There is no present medium whereby significant progress in this field is brought promptly to the attention of practitioners and to their representatives responsible for fostering and extending voluntary insurance; now, therefore, be it

Resolved, That the American Medical Association arrange for regular dissemination of health insurance news in a publication of the American Medical Association.

RESOLUTION ON DISTRIBUTION OF INTERNS

WHEREAS, The continuing unequal distribution of interns between the university and non-university hospitals is becoming more glaringly apparent, the university hospitals have one intern to each 21⅓ beds while the non-university hospitals have only one intern to every 60 beds; and

WHEREAS, The non-university hospitals are caring for 75% of the total patients at present and would be called on to shoulder an even larger percentage of the case load in event of a civilian disaster; and

WHEREAS, This situation of intern shortage in the non-university hospitals has been referred to a committee of the American Medical Association for study and remedial recommendations; and

WHEREAS, To date there have been no suggested methods of relief forthcoming from this committee; therefore be it

Resolved, That the American Medical Association Committee on Training of Interns expedite the preparation of a report containing practical suggestions toward the immediate solution of this critical intern problem.

RESOLUTION ON DISSEMINATION OF FACTUAL INFORMATION PERTAINING TO THE PRACTICE OF MEDICINE

WHEREAS, False and misleading information is being disseminated in popular magazines regarding the practice of medicine in hospitals and the policies of the American Medical Association; be it hereby

Resolved, That the American Medical Association be requested to take immediate steps to inform and educate effectively the public, hospital trustees and the medical profession as to the facts pertaining to the practice of medicine in hospitals and the American Medical Association principles governing the same.

RESOLUTION REQUESTING THAT AMERICAN MEDICAL ASSOCIATION PLANS BE PUBLICIZED

WHEREAS, The prospect of an insufficient number of physicians to serve the people of the United States in the next ten to twenty years has been given widespread publicity through newspapers and magazines and by radio; and

WHEREAS, The reasons for predicting a shortage of doctors as outlined in these various articles appear reasonable and understandable because of the arguments presented; and

WHEREAS, The American Medical Association is accused of obstructing plans for increasing the training program for physicians; therefore be it

Resolved, That the American Medical Association prepare specific replies to these arguments, pointing out in detail the plans the Association has to combat or forestall the anticipated shortage and, furthermore, that efforts be made to have statements on this question publicized by the press and radio for the purpose of acquainting the public with the American Medical Association plans.

ABSTRACT OF MINUTES OF MEETING OF BOARD OF TRUSTEES HELD IN CHICAGO, APRIL 14, 1951

Legislation.—The Board approved the following actions of the Committee on Legislation: S. 1043, S. 1257, H. R. 2831, H. R. 3029 and H. R. 3197, supported; S. 1140, disapproved.

Appointments.—Dr. E. E. Irons was selected to appear on the television program "The March of Time Through the Years" to discuss the film entitled "Men of Medicine," which was made in 1938.

Mr. Howard O. Brower of the staff of the Council on Medical Service was appointed to attend the Health and Accident Underwriters Conference in Detroit, May 14-16.

Drs. L. H. Bauer and Rustin McIntosh were selected to represent the American Medical Association on the American Council on Rheumatic Fever.

Dr. James C. Sargent, Dr. E. S. Hamilton, Dr. Joseph Lawrence and Mr. C. Joseph Stetler were appointed to attend the Civil Defense Conference in Washington, D. C., May 7-8.

Dr. Joseph Lawrence represented the Association at the National Conference on United States Foreign Policy in Washington, D. C., May 2-4.

Fred V. Hein, Ph.D., of the headquarters staff and Dr. Cyrus Maxwell of the Washington Office of the American Medical Association were appointed to attend the Conference on Elementary Education in Washington, D. C., April 30, May 1 and 2.

Dr. James R. Wilson, Secretary of the Council on Foods and Nutrition, was authorized to accept appointment as liaison representative of the Association to the Food and Nutrition Board of the National Research Council and to attend the spring meeting in Washington, D. C., May 4-5.

Publication of Book "School Health Services."—The Board authorized the development and publication, under the auspices of the American Medical Association, of a book entitled "School Health Services."

Inaugural Meeting.—Arrangements for broadcasting the Inaugural Meeting of the American Medical Association on Tuesday evening, June 12, in Atlantic City were approved by the Board.

Dates for Annual Sessions.—The dates for the 1952 and the 1953 Annual Session of the Association were set as follows: Chicago, June 9-13, 1952; New York, June 1-5, 1953.

Public Relations.—The following representatives of state medical societies were appointed to serve on an advisory committee for the Director of the Department of Public Relations of the Association:

Mr. Charles S. Nelson, Executive Secretary, Ohio State Medical Association, Columbus, Ohio.

Mr. Ray E. Smith, Executive Secretary, Indiana State Medical Association, Indianapolis.

Mr. Harvey T. Sethman, Executive Secretary, Colorado State Medical Society, Denver.

Mr. Hugh W. Brenneman, Public Relations Counsel, Michigan State Medical Society, Lansing.

Mr. John Hunton, Executive Secretary, California Medical Association, San Francisco.

Mr. Richard H. Graham, Executive Secretary, Oklahoma State Medical Association, Oklahoma City.

Mr. Charles H. Crownhart, Secretary, State Medical Society of Wisconsin, Madison.

Mr. Frederick W. Miebach, Director, Public Relations Bureau, Medical Society of the State of New York, New York.

The first meeting of the Committee will be held in Atlantic City on June 10.

Hospital Standardization.—The Board voted to refer to the House of Delegates in June a complete report on the hospital standardization program which has been discussed at various meetings of representatives of the American Medical Association, the American Hospital Association, the American College of Surgeons and the American College of Physicians.

American Medical Directory.—Several matters pertaining to the publication of the Nineteenth Edition of the American Medical Directory were considered and the Board voted to omit the medical laws, to increase the price from $20.00 to $25.00 on orders received before publication and from $25.00 to $30.00 on orders received after publication and to authorize a reevaluation of all listings of societies.

Nurse Recruitment Program.—An official statement of support from the American Medical Association of the United States Army nurse recruitment program was approved.

MERGE FUNDS TO AID MEDICAL SCHOOLS

Address by Dr. Elmer L. Henderson, President, American Medical Association, Before Annual Meeting of The National Fund for Medical Education, New York City, May 16, 1951

Mr. Colt, President Hoover, Members of the Board of Trustees, Distinguished guests:

The medical profession of the United States is proud of the high quality of medical education that has been achieved in this country in the last fifty years through the combined efforts of our great private universities, our state and local governments, philanthropic foundations, individual benefactors and the profession itself. By insisting on the importance of an intensive educational program that is both practical and theoretical, that provides intimate contact between teacher and student and that is stimulated and supported by scientific curiosity and research, this country in the short space of fifty years has advanced from a greatly inferior station to a position of world leadership in medical education.

The medical profession regrets, as do many others, that the financing of our medical schools has become such a serious problem for our universities and those responsible for our universities.

While many individual members of the medical profession have in the past contributed generously either in time or money or both to the support of the medical schools with which they have been associated, the needs of the medical schools today have so increased that it has become clear that more general and systematic support on the part of the profession is urgently needed.

It was for this purpose that the American Medical Association last December sponsored the establishment of the American Medical Education Foundation and appropriated $500,000 as the initial contribution to the Foundation's 1951 fund. Additional contributions are now being solicited from individual members of the profession and from state and county medical societies. This Foundation gives those of us in the medical profession an instrument through which we can do our part toward insuring that those of future generations who will come forward to take our places will have the best preparation possible for their important work.

It makes me very happy to report to you today that the Directors of the American Medical Education Foundation have voted to merge the funds they collect with those of the National Fund for Medical Education for distribution by the National Fund to the medical schools.

Because of rising costs, inflation, fewer large individual benefactions and reduced income from endowments, the medical schools need, without further delay, assistance of the type this voluntary fund can give.

We have felt that merging the contributions of the Foundation with those of the Fund was the best way that we could demonstrate to the nation the importance which we attach to the National Fund for Medical Education and the confidence that we have in its distinguished Board of Trustees. We of the profession have the highest hopes for the success of the National Fund and we want you to know how deeply appreciative we are that you should interest yourselves so actively and enthusiastically in a problem which concerns us so closely. We pledge that we shall not relax our efforts to secure through our Foundation ever increasing support from the medical profession for this important undertaking. We hope that you will be successful in winning similar support from many other groups in our society and that through the combined efforts of all of us, a truly great National Fund will be developed that will permanently insure for the American people the benefits of a superior program of medical education.

JOINT COMMISSION ON ACCREDITATION OF HOSPITALS

The American College of Surgeons for more than 25 years has administered a successful hospital standardization or accreditation program, developing standards, inspecting hospitals and approving those hospitals which met minimum standards. Because of the expanding scope and requirements of this program during the intervening years, its financing has become more and more demanding.

In the fall of 1950 the American College of Surgeons invited representatives of the American College of Physicians, American Hospital Association and American Medical Association to meet with representatives of the American College of Surgeons to discuss the establishment of a joint hospital accreditation program. After frequent meetings over a period of six months, the details of a plan for such a joint program were adopted unanimously by this conference committee. Representatives of each of the four organizations were designated as a subcommittee of four to prepare this statement for publication.

There follows an outline of the basic pattern of the proposal for a joint hospital accreditation program as worked out by the large committee and recommended to the four organizations.

The proposal provides for the establishment of a Joint Commission on Accreditation of Hospitals. Members of the commission will be the constituent organizations, each of which will be represented by appointees of its choice. Basically the commission will be composed of three representatives of the American College of Physicians; three representatives of the American College of Surgeons; six representatives of the American Hospital Association, and six representatives of the American Medical Association. The exact composition of the commission, however, will depend on the acceptance of an invitation to participate to be extended to the Canadian Medical Association. Since both Colleges and the American Hospital Association number Canadian members in their organization, it was the consensus of the conferees on the interim committee that Canadian interests in these fields would be represented by their parent organizations, but that the medical profession in Canada as a whole might desire representation similar to that proposed for the American Medical Association. If the invitation to participate is accepted by the Canadian Medical Association, the appointment of commissioners among the constituent organizations will be adjusted to provide such representation.

The Joint Commission on Accreditation of Hospitals will formulate standards, determine the type and scope of inspections, allocate hospitals for inspection to the several participating organizations, maintain records, and award all certificates of accreditation. It will be the sole and final authority on these matters. The commission will employ a small staff to be directed by a physician, preferably one experienced in hospital administration.

Except in unusual or controversial cases, the staff of the commission will make no inspections. Inspections will ordinarily be made by the field staffs of constituent organizations and may be combined with other inspections made by these organizations for other purposes, such as approval for intern and resident training.

All inspections for the purposes of hospital accreditation under this program will be made and reported in a uniform manner to be determined by the commission, and such reports of inspection will be evaluated by the staff of the commission and acted upon by the commission itself. There will be no interference with other types of inspections made by the constituent organizations.

The budget of the commission will be met by the constituent organizations in the same proportion as their representation on the commission. The initial annual budget has been estimated at approximately $70,000. Additional expenses will be borne by the constituent organizations for financing field staff work and other activities incidental to the maintenance of necessary inspection records required for the conduct of special approval programs conducted by constituent organizations.

The Regents of the American College of Physicians and the American College of Surgeons have approved the proposal for the establishment and financing of the Joint Commission on Accreditation of Hospitals. The authoritative body of the American Medical Association will meet to consider the proposal in June 1951. Similar consideration of the proposal will be given by the American Hospital Association at its annual meeting in September 1951.

ATLANTIC CITY SESSION

Program to Start Monday Morning

The first scientific meeting of the General Assembly at the Atlantic City Session is scheduled for 2:00 p. m. on Monday, June 11, but physicians who are in Atlantic City on Monday morning will find plenty to interest them. Convention Hall will be open at 8:30 a. m. with more than 355 exhibits in the Technical Exposition and 298 exhibits in the Scientific Exhibit.

The television program begins at 9:00 a. m. with a large number of receivers on the Lower Level of Convention Hall, adjoining the Scientific Exhibit.

The motion picture program starts at 9:30 a. m. in Rooms A and B on the main floor of Convention Hall, a carefully selected list of films being shown in the two rooms simultaneously.

Question and answer conferences on diabetes and on overweight are scheduled for 10:00 a. m. in the Scientific Exhibit, the programs of each one continuing throughout the day, including the noon hour.

General Registration at Convention Hall will begin Sunday, June 10, at 10:00 a. m. and will continue daily thereafter beginning at 8:30 a. m. Physicians who are in Atlantic City on Sunday are urged to register then, to avoid the rush on Monday.

FEDERAL LEGISLATION

Physically Handicapped

Representative Rogers of Massachusetts introduced H. R. 3848, and Representative Madden of Indiana introduced H. R. 3902. These two bills are identical with 11 others which would establish the Federal Agency for Handicapped and define its duties. All have been referred to the House Committee on Education and Labor. Hearings have not yet been scheduled.

MEDICAL NEWS

ARKANSAS

Councilor District Program.—The First Councilor District of the Arkansas Medical Society conducted a program May 24 at Tyronza. Among the speakers were:

William R. Brooksher, Fort Smith, Bulwark of Free Medicine, the County Medical Society.
Robert L. Sanders, Memphis, What's New in Surgery.
The Hon. Sidney S. McMath, Little Rock, The Medical Center in Arkansas.
Louis A. Krause, Baltimore, What's New in Medicine.

The dinner address was given by Dr. Krause on "Medicine and Surgery in The Bible." The meeting was attended by representatives of the American Academy of General Practice, Southern Medical Society, Mid-South Post Graduate Assembly, Texas Medical Society, editors of the *Arkansas Gazette* of Little Rock, *Commercial Appeal* of Memphis, and *The Mississippi Doctor* of Booneville, Miss. The women were addressed by Robert C. Grier, president of Erskine College, Due West, S. C., on "Woman's Place in a Changing World."

CALIFORNIA

Dr. MacPherson Heads Medical College.—Dr. Walter E. MacPherson, Los Angeles, president of the College of Medical Evangelists from 1942 to 1948, has been elected again to head the institution. He will replace Dr. George T. Harding, who succeeded Dr. MacPherson in 1948. Dr. MacPherson has been serving as dean and vice president of the college. Dr. Harold Shyrock, Loma Linda, has been advanced from associate dean to dean of the college, and Dr. Varner J. Johns, Los Angeles, has been named associate dean. All are alumni of the College of Medical Evangelists. Dr. Harding will return to the presidency of Harding Sanitarium at Worthington, Ohio.

DISTRICT OF COLUMBIA

Anniversaries of Veteran Physicians.—When Dr. Edward Y. Davidson celebrated his ninetieth birthday on April 10, the Medical Society of the District of Columbia participated in the anniversary by calling on him at his home and bringing the attention of its membership to the occasion. Dr. Davidson is the oldest practicing physician of the society, which is indebted to him for, among other things, having taken a major part in the erection of the society's home in 1921. The society has already recognized his services by establishing the Davidson Lecture (1929), and his portrait, presented a few years ago by his friends, hangs in the board room. Dr. Francis A. St. Clair will reach his ninetieth birthday July 12 of this year, and several others will celebrate this anniversary in the next one or two years. The society will take due recognition of the occasions.

Personals.—Dr. Edward B. Tuohy of the Georgetown Medical Center, Washington, D. C., was elected a director of the American Board of Anesthesiology at a meeting in Coronado, Calif., on April 6. Dr. Tuohy will represent the Section on Anesthesiology of the American Medical Association and is replacing Dr. Henry S. Ruth of Philadelphia, who resigned as a director of the board April 6. Dr. Tuohy's term will expire at the annual meeting of the board in October 1955.——Dr. Fred L. Soper, director, Pan American Sanitary Bureau, regional office of the World Health Organization, recently visited Bogotá, Colombia, to confer with health authorities of that republic on plans for international collaboration in the production of yellow fever vaccine. Dr. Soper left Washington May 12 for Geneva, Switzerland, to attend the fourth World Health Assembly.

FLORIDA

Society News.—At the annual spring meeting of the Florida Radiological Society Dr. John J. McGuire, Pensacola, was elected president; Dr. Thomas H. Lipscomb, Jacksonville, vice president, and Dr. Nelson T. Pearson, Miami, secretary-treasurer.

IDAHO

State Medical Meeting in Sun Valley.—The 59th annual meeting of the Idaho State Medical Association will be held at Sun Valley June 18 to 20 under the presidency of Dr. Russell T Scott, Lewiston. Guest speakers and their papers are as follows:

Harry H. Gordon, Denver, Modern Trends in Infant Feeding; Some Problems in the Care of Premature Infants; Iso-Immunization, and Treatment of Acute Rheumatic Carditis, Including Hormone Therapy.
Donald G. Tollefson, Los Angeles, Practical Problems in Obstetrics; Practical Problems in Gynecology.
Demid L. C. Bingham, Kingston, Ont., Canada, Chronic Venous Insufficiency; Obliterative Peripheral Arterial Diseases; Carcinoma of the Rectum and Colon, and Surgery of the Sympathetic Nervous System.
Curtice Rosser, Dallas, Texas, Diverticulitis; Bizare Tumors of the Rectum; Management of Common Ano Rectal Lesions, and Pruriti Ani.
George W. Thorn, Boston, Clinical Evaluation of ACTH and Cortisone Treatment of Uremia; Treatment of Gout, and Treatment of Thyrotoxicosis.
John Z. Bowers, Salt Lake City, Some Aspects of the Atomic Bomb.

Sun Valley has excellent facilities for golf, fishing, horseback riding, tennis, swimming, ice-skating and summer skiing in the mountains.

ILLINOIS

Hospital Intern Day.—Representatives of 33 hospitals in Illinois accepted the invitation of the University of Illinois College of Medicine on May 2 to discuss with third-year students the merits and virtues of their hospitals from the standpoint of internships. The students were excused from their classes to participate in the program. Plans for Hospital Intern Day were formulated after Dean Stanley W. Olson had received a number of letters from hospitals requesting that they be given permission to send a representative to talk to students who will be applying for internships in the near future.

Conference on Human Behavior.—Problems related to human behavior will be explored May 17 to 19 at a conference at Northwestern University in connection with the school's centennial. About 30 anthropologists, psychologists, sociologists, and psychiatrists will participate. The conference is supported through a $2,000 gift from the Viking Fund of New York. At the one public session, at 8:30 p. m. Thursday, Ralph Linton, Ph.D., Sterling professor of anthropology at Yale University, New Haven, Conn., and Dr. Richard S. Lyman, professor and chairman of the neuropsychiatry department at Duke University, Durham, N. C., will discuss "What We Know and What We Don't Know About Human Behavior," each from the point of view of his own field. The program for the closed working sessions will cover: (1) methods of approach to human behavior; (2) factors in the development and structure of personality; (3) the mentally abnormal and the culturally deviant; (4) nature of society and culture, and (5) summary sessions. Participants in the three-day working sessions will include Dr. Otto Klineberg, professor of psychology at Columbia University, New York; Dr. Clara M. Thompson, practicing psychiatrist in New York and member of the board of trustees, William Alanson White Psychiatric Foundation, Washington, D. C.; John P. Gillin, Ph.D., professor and chairman of the department of anthropology, University of North Carolina, Chapel Hill; Dr. L. Bryce Boyer, practicing psychiatrist, Langley Porter Clinic, San Francisco; Orval H. Mowrer, Ph.D., research professor of psychology, University of Illinois, Urbana, and Dr. Thomas M. French and Dr. Charlotte G. Babcock, Institute of Psychoanalysis, Chicago.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Chicago

Narcotic Violation.—Dr. Delbert Ross Blender, 536 North Rush St., pleaded guilty in the Northern District of Illinois to an indictment charging a violation of the federal narcotic laws and on April 20 was sentenced to a term of one year and one day.

Personal.—Mr. Lawrence C. Salter, first director of Press Relations at the headquarters of the American Medical Association, has been named secretary of the Playtex Park Research Institute, Dover, Del., recently founded as a public service by the International Latex Corporation of Dover for the purpose of supporting research in the field of pediatrics. He will reside in New York.

Michael Reese Institute and Conference.—Michael Reese Hospital's $2,000,000 Institute for Psychosomatic and Psychiatric Research and Training will be dedicated at ceremonies June 2 at 3 p. m. Top ranking state and city officials and other civic leaders will officiate. Dr. Roy R. Grinker, director of the institute, stated that patients will be transferred from the present 22 bed psychiatric unit in the private pavilion to the new institute on June 4. The five-story building has a capacity of 82 patients. The new institute is the first major hospital building for patients to be completed in the long-range enlarged medical center plans of Michael Reese Hospital. Funds for the institute have been provided by the Jewish Federation of Chicago; Mr. and Mrs. Albert D. Lasker, New York; Mr. and Mrs. Leigh Block, Chicago, and Mr. and Mrs. Sidney Brody, Beverly Hills, Calif. A tunnel system connects the institute with the main hospital buildings a block north. The foundations were laid with a view to considerable expansion in the future, when two new floors will be added. One third of the beds will be for service cases, part pay or no pay. The research program is supported by a fund created by the Lasker family and supplemented by private donors and government subsidies. There are facilities for research, teaching and care of patients. About 20 per cent of the space has been set aside for research. One of the prime purposes of the institute is the teaching of much-needed trained personnel: resident physicians training to become psychiatrists, medical students, social workers, nurses, occupational therapists, psychologists, interns, residents and staff doctors in other specialties on the Michael Reese staff. The institute has four divisions: the psychosomatic division, the division for psychiatric patients, the division for child care and a special division for disturbed patients. The official dedication of the new institute will be preceded by a conference June 1 on "Some Aspects of Mid-Century Psychiatry." Visiting participants will include:

George L. Engel, University of Rochester (N. Y.) School of Medicine and Dentistry, Homeostasis, Behavioral Adjustment and Disease.

David Levy, Columbia University College of Physicians and Surgeons, New York, Observational Methods in Psychiatry.

Charles Johnson, Fiske University, Nashville, Tenn., Sociology.

INDIANA

Conference on Industrial Vision.—Purdue University, Lafayette, will conduct a conference on industrial vision June 4 to 5 at which the university staff will present a summary of its research in this field during the past 12 years. Subjects under discussion will be the background and development of the tests, necessary research underlying an industrial vision program, requirements of instruments, measuring of job success, results of the programs to be discussed by Dr. Helwig H. Kuhn, Hammond, Ind., and a review of one specific vision program in a radio manufacturing company. The program will end with a panel discussion on industrial vision. For information address Dr. Joseph Tiffin, Division of Education and Applied Psychology, Purdue University, Lafayette, Ind.

Personals.—Gov. Henry F. Schricker has appointed Mr. Ray E. Smith, executive secretary of the Indiana State Medical Association, a member of the Indiana Council of Mental Health.——Dr. Herbert S. Gaskill, professor of psychiatry at the Indiana University School of Medicine, Indianapolis, has returned from a month's assignment in Japan as a consultant on psychiatry with the Army Medical Corps.——Dr. Matthew Winters, Indianapolis pediatrician, has resigned as director of pediatric services at Riley Hospital for Children, Indianapolis, after serving in this capacity 20 years. For having supervised the care of an estimated 60,000 children during this period.

LOUISIANA

State Medical Meeting.—The annual meeting of the Louisiana State Medical Society was held at the Hotel Roosevelt in New Orleans May 7 to 9 under the presidency of Dr. George W. Wright, Monroe. The program was divided into section meetings at which the guest speakers were Dr. Axel N. Arneson, St. Louis; Dr. James Marvin Baty, Boston; Dr. Justin J. Cordonnier, St. Louis; Dr. Louis J. Gariepy, Detroit; J. D. Grey, D.D., New Orleans; Dr. Seale Harris, Birmingham, Ala.; Dr. George R. Herrmann, Galveston, Tex., and Dr. Fred W. Rankin, Lexington, Ky. The Honorable Otto E. Passman, Monroe, gave the address at the public meeting on Monday evening.

MICHIGAN

Symposium on Endocrinology.—The annual All Day Clinic of the St. Clair County Medical Society will be held June 5 at the Black River Country Club in Port Huron. This clinic is to be a symposium on endocrinology. Speakers include Dr. Robert B. Greenblatt, professor of endocrinology of the Medical College of Georgia, Augusta; Dr. Warren O. Nelson, professor of anatomy at the University of Iowa, Iowa City, and Dr. Edward E. Henderson, medical director of the Schering Corporation in Bloomfield, N. J. The program will start at 10 a. m. and will continue into the evening with an open panel discussion on the problems of endocrinology. Dr. Edgar C. Sites, Port Huron, is chairman-director of the program. His offices are in the Michigan National Bank building, Port Huron.

MISSOURI

University ECA Teaching Program.—Chancellor Arthur H. Compton announced in April the signing of a contract between Washington University School of Medicine, St. Louis, and the Economic Cooperation Administration of the United States government to put into action a cooperative teaching program between the school of medicine and the two medical schools of Thailand, or Siam, in Bangkok. With grants-in-aid for a two year period, staff members of the school of medicine will establish residence in Bangkok to teach in the two medical schools there, and a number of Thailand doctors will in turn come to Washington University Medical Center for advanced training and study. The program is to include an exchange of nurses, medical technicians and nurse anesthetists as well as physicians. Such a cooperative teaching program is an active part of the United States technical and economic assistance program administered by ECA and represents a new aspect of United States foreign policy in the effort to contain communism by strengthening the free nations of the world. Faculty members will come from both the preclinical and clinical medical departments and from the School of Nursing of Washington University. At least six staff members are to be in residence at Bangkok for one year periods. They will teach medical students and hospital interns and residents much as is done in this country and where advisable will offer suggestions for reorganizing departments. At the end of the first year these staff members will return, and others from the university will take their places, thus establishing continuity for a long-range program. It is expected that the exchange will be put into effect in May or early June. In addition to the one year tours of duty, there will be shorter periods wherein specialists will conduct refresher courses for Thailand doctors. Dr. Ben Eiseman, instructor in surgery at the school of medicine, left in April to spend six weeks teaching surgery as well as making preliminary arrangements to get the exchange program under way. Dr. Clifford Read Boles, assistant in clinical pediatrics, plans to leave this summer for a three month tour teaching pediatrics in the medical schools and hospitals. In effect, the school of medicine will "adopt" the two medical schools and their affiliated schools of nursing at Bangkok, the Siriraj Medical and Nursing School and the Chulalongkorn Hospital Medical and Nursing School. These are the only medical schools in the country. During the past two years the Washington University has had from four to seven faculty members from the Bangkok medical schools as postgraduate students.

NEW YORK

Postgraduate Lectures.—On May 16 Dr. Joseph L. Morse, assistant clinical professor of dermatology and syphilology, New York University Post-Graduate Medical School, New York, delivered a postgraduate lecture for the Orange County Medical Society in the Horton Memorial Hospital Nurses' Home in Middletown. His subject was "Common Skin Diseases: Diagnosis and Treatment."

New Mental Hospital.—Early in April patients moved into the 120-bed infirmary recently completed in Letchworth Village. It is the first building to be completed in the 125 million dollar construction program of the New York State Department of Mental Hygiene. The second infirmary at Letchworth Village was completed in April, and two others are expected to be ready for patients by the end of June. These four new infirmaries will increase the total capacity of Letchworth Village by 480 beds. The department's building program will provide a total of 9,500 additional beds in 13 institutions.

New York City

Harlem Hospital Tumor Conference.—The last of the Harlem Hospital Tumor Conferences for this season will take place May 23 at 11 a. m. at the hospital. Dr. Virginia Kneeland Frantz, associate professor of surgery, Columbia University College of Physicians and Surgeons, will speak on "I-131 Therapy in Thyroid Cancer." The conference is open to the profession.

Herter Lecture.—Sir Charles Harington, Ph.D., director of the National Institute for Medical Research, London, England, delivered the 48th annual Christian A. Herter Lecture at New York University College of Medicine May 7 on "Experimental Research—Work in Chemotherapy." The Herter Lectureship was establshed in 1904 by Dr. Christian A. Herter, former professor of chemical pathology, to provide annual lectures on advances in medical science.

Municipal Hospitals' Lay Advisory Boards.—To bring the 32 municipal hospitals and their communities closer together the medical superintendent of each institution will set up a lay advisory board comprised of representative members of the community. The new program has been designed by the city department of hospitals. Each board will be a collaborating organization serving in an advisory capacity to the medical superintendent. Several hospitals have already set up their boards of 12 or 13 members. Discussions at regular meetings will be scheduled on institutional problems.

NORTH CAROLINA

Personal.—Norman F. Conant, Ph.D., professor of mycology, Duke University School of Medicine, Durham, will lecture at Scandinavian medical centers this spring. He will spend two months in Europe speaking on mycology at the invitation of Dr. Arvid Lindau, professor of bacteriology, at the Bakteriologiska Institutionen, Lund, Sweden. Dr. Conant, director and founder of the Duke Fungus Registry, one of the world centers of diagnosis and study of fungus disease, will speak at university medical centers at Lund, Stockholm, Upsala and Gothenburg, Sweden, and at Copenhagen, Denmark.

Physician Named Mother of the Year.—Dr. Mary T. Martin Sloop, Crossnore, was named American mother of 1951 by the American mothers committee of the Golden Rule Foundation, which is devoted to the welfare of mothers and children. Dr. Sloop, known as the "grand lady of the Blue Ridge," won the award for her work with mountain children. She founded the Crossnore School for Underprivileged Children and has been credited with bringing good roads, modern farming methods, religious tolerance, a hospital and dental clinic, and vocational instruction to Avery County. The committee said more than 5,000 letters were written in her behalf, including letters from governors and senators. Dr. Sloop, the wife of a country physician, Dr. Eustace H. Sloop, and the mother of two children, also physicians, was one of 52 mothers nominated by committees in every state, the District of Columbia, Alaska, Hawaii, and Puerto Rico.

PENNSYLVANIA

State Allergy Meeting.—The spring session of the Pennsylvania Allergy Association is being held at Galen Hall, near Wernersville, beginning the afternoon of May 18 through May 20. Original papers and panel discussions of various aspects of allergy are being presented by Dr. Harold Abramson, New York; Dr. Joseph H. Fries, Brooklyn; Dr. Jerome Glaser, Rochester, N. Y.; Dr. Townsend W. Baer, Edward Claus, Ph.D., and James Mansmann, Wilkensburg; Drs. Jean Crump, and Harrison F. Flippin, Philadelphia; Drs. Philip M. Gottlieb, Harry L. Rogers, and Harry P. Schenck, Philadelphia; Dr. James W. Flood, Sayre; Dr. Luther J. King, Meadville; Dr. Stephen D. Lockey, Lancaster, and Dr. Joseph F. Ricchuiti, Pottsville.

Philadelphia

Borden Award in Nutrition.—The 1951 Borden Award in Nutrition was presented to Dr. Paul Gyorgy, professor of nutrition in pediatrics, University of Pennsylvania School of Medicine, and chairman of the research council of Wyeth Incorporated, at the annual meeting of the American Institute of Nutrition in the Cleveland Hotel May 1. Wendell H. Griffith, Ph.D., president of the institute, presented the check for $1,000 and a gold medal to Dr. Gyorgy "in recognition of distinguished research which has emphasized the nutritive significance of the components of milk."

Society News.—Dr. Richard J. Bing, associate professor of surgery and assistant professor of medicine at Johns Hopkins University in Baltimore was the guest lecturer at the annual meeting of the Undergraduate Research Society of Hahnemann Medical College May 9. He spoke on "The Coronary Circulation in Health and Disease as Studied by Coronary Sinus Catheterization."

SOUTH CAROLINA

State Medical Meeting.—The South Carolina Medical Association met at the Ocean Forest Hotel in Myrtle Beach May 15 to 17 under the presidency of Dr. Wilbur R. Tuten of Fairfax. Guest speakers included:

Iredell M. Hinnant, Cleveland, Drug Therapy in Allergic Disease.
Harry S. Mustard, New York, The Changing Picture in Epidemiology.
W. Paul Sanger, Charlotte, N. C., Dangers of Symptomless Intrathoracic Lesions.
J. Grafton Love, Rochester, Minn., Dumbbell Neurofibromas Involving the Spinal Cord and Nerve Roots (so-called hourglass tumors).
H. F. Sharpley Jr., Savannah, Ga., Scopolamine in Obstetrics.

TENNESSEE

Memorial to Dr. Wittenborg.—The anatomy building at the University of Tennessee medical units will be named for Dr. August Hermsmeier Wittenborg at formal dedicatory services to be held during the June commencement. Dr. Wittenborg joined the staff of the old College of Physicians and Surgeons as an instructor in physiology in 1911. In 1912 when the college merged with the University of Tennessee College of Medicine, Dr. Wittenborg became the head of the department of anatomy, and with the organization of the faculty into divisions in 1925 he became chief of the division of anatomy. Dr. Wittenborg served as dean of the college of medicine from 1917 to 1919 and was acting dean for three months in 1921. He died in Ann Arbor, Mich., Aug. 21, 1941.

TEXAS

Dr. Viets Made University Lecturer.—Dr. Henry R. Viets of Boston, Chairman of the Council on Scientific Assemblies of the American Medical Association, has accepted appointment as lecturer in neurology and in historical and cultural medicine at the University of Texas Medical Branch, Galveston. Dr. Viets plans to spend a week each semester in Galveston for lectures and conferences with the staff and students.

Expedition to Colombia.—In association with the Museum of Natural History of Houston, the University of Texas Medical Branch, Galveston, will participate in a scientific expedition to the Republic of Colombia for the collection of insect vectors for tropical disease. Dr. Ludwik Anigstein and Don W. Micks, D.Sc., of the department of preventive medicine and public health are planning to make the trip.

UTAH

Ogden Surgical Society.—The meeting of the Ogden Surgical Society will be held in Ogden with headquarters at the Hotel Ben Lomond May 23-25 under the presidency of Dr. Frank K. Bartlett, Ogden. Guest speakers include:

Arthur W. Allen, Boston, The Problem of Gastric Ulcer and Cancer.
Arthur R. Colwell, Chicago, Surgical Complications of Diabetes Mellitus.
Gilbert J. Thomas, Sawtelle, Calif., Tumors of the Testicle.
Richard B. Cattell, Boston, Present Status of Surgery of the Pancreas.
Edmund B. Spaeth, Philadelphia, Senility and Senescence in Ophthalmology.
Winchell McK. Craig, Rochester, Minn., Painful Syndromes Caused by Intra-Spinal Lesions Simulating Other Conditions.
Paul W. Schafer, Kansas City, Kans., Diagnosis and Management of Minimal Chest Injuries.
John Z. Bowers, Salt Lake City, Peace Time Application of the Products of Atomic Energy.
Keith S. Grimson, Durham, N. C., Surgical Treatment of Hypertension.
Charles E. McLennan, San Francisco, Cancer of the Endometrium.
Alton Ochsner, New Orleans, Post Operative Care.
Guy A. Caldwell, New Orleans, End Results of Lumbosacral Spine Fusion.

There is no registration fee for physicians, medical students, and guests.

VERMONT

Annual Clinical Meeting.—The annual May clinical meeting of the University of Vermont College of Medicine, sponsored by the Vermont State Medical Society, will be held in Burlington May 24. It is planned especially for physicians in general practice and has been extremely well received for a number of years. Chairman of the committee is Dr. Platt R. Powell, Burlington. There will be no registration fee, as this is looked on as an integral part of the society's annual program. The papers are prepared and presented by the faculty of the college of medicine as a service to the physicians of the state.

WASHINGTON

Rabies.—The Washington State Department of Health in a follow-up report on an outbreak of rabies in dogs in Spokane states that the source of infection of the first case was not found. From March 10 to April 21 a total of 14 dogs and one cat in Spokane were proved to have rabies as well as one additional animal in the county and also one in the adjoining county of Whitman, near the Idaho-Washington boundary line. Five persons have been bitten by rabid animals. A definite pattern of geographic spread has been noted in Spokane.

GENERAL

Chemistry Society Award.—Dr. Arthur Kornberg, senior surgeon in the division of biochemistry of the U. S. Public Health Service, Bethesda, Md., received the $1,000 Paul-Lewis Laboratories Award for enzyme chemistry at the Boston meeting of the American Chemical Society April 2. The award, which includes a gold medal, was made to Dr. Kornberg in part because of new clues he discovered to the mechanism by which sugars and starches are transformed in the living body.

Congress of Electro Radiologists.—This congress will be held in Brussels, Belgium, July 23-28 under the presidency of Professor Maisin. The general discussion topic will be nontuberculous chronic articular lesions. The congress will include a section on radiobiology, radiodiagnosis, radiotherapy, electrotherapy and radiologic physics. The Secretariat of the Congress is at the Maison des Médecins, 54, Boulevard de Waterloo, Bruxelles, Belgium.

American Dermatological Association.—This association will hold its 75th anniversary meeting at the Homestead, Hot Springs, Va., May 23 to 26 under the presidency of Dr. Henry E. Michelson, Minneapolis. Subjects under discussion include: attempt to demonstrate antibodies in eczematous contact-type dermatitis: a preliminary report; treatment of parapsoriasis with vitamin D_2, antibiotic activities of a member of the actinomyces group against certain pathogenic fungi; skin changes in low-voltage roentgen ray irradiation, and treatment of pyodermas: a comparative study with several new antibiotic agents. The association banquet will be held May 23 at 7 p. m.

Fund to Aid Medical Students.—The first meeting of the Joseph Collins Foundation, a million dollar fund to provide for the needs of medical students, was held in New York April 24. Dr. L. Beverley Chaney, an executor of the Collins estate, was elected president of the new foundation (THE JOURNAL Aug. 26, 1950, p. 1505). The fund is expected to yield $50,000 a year. The board has elected to concentrate at first on tuition scholarships only for 50 students annually. Grants will be restricted to young men and women who have been accepted for medical college. Headquarters of the foundation will be at the office of Willkie, Owen, Farr, Gallagher & Walton, 15 Broad St., N. Y. Dr. Collins had expressly stated that the students to be aided by the fund should come preferably from state or small eastern colleges and not Yale, Harvard or Princeton.

Rockefeller Foundation Grants.—The Rockefeller Foundation made grants totaling $1,481,718 during the first quarter of 1951. The largest of the medical grants include the following: $100,000 over a five year period to the University of Oregon Medical School, Portland, for studies in constitutional medicine; $50,000 to Columbia University, New York; $30,000 to Tufts College, Medford, Mass., and $12,000 to the University College in Dublin, Ireland, for studies in biochemistry; $42,000 to Columbia University for research in immunochemistry, and $22,500 to Dalhousie University, Halifax, Nova Scotia, for the study of psychological factors in pregnancy. Other grants to medical services include $50,000 to the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, for studies of genetic factors of intelligence and emotional variation in mammals; $27,300 to the University of Minnesota, Minneapolis, for research in human genetics; $19,500 to the University of Oslo, Norway, to aid in establishing a research laboratory of respiratory physiology.

Conference of Medical Presidents.—The annual meeting of the Conference of Presidents and Other Officers of State Medical Associations will be held at the Rose Room of the Traymore Hotel, Atlantic City, N. J., on the afternoon of June 10. Dr. Julian P. Price, Florence, S. C., is president of the conference; Dr. W. Andrew Bunten, Cheyenne, Wyoming, president-elect, and John E. Farrell, Sc.D., Providence, R. I., secretary-treasurer. The program includes addresses as follows: "A Physician Views Medicine," Dr. W. Andrew Bunten of Cheyenne, Wyo.; "An Editor Views Medicine," Edwin F. Abels of Lawrence, Kan., editor of the Lawrence *Outlook*, and past president of the National Editorial Association; "A Clergyman Views Medicine," the Most Reverend John J. Wright, D.D., Ph.D., Roman Catholic Bishop of the Diocese of Worcester, Mass.; "A Legislator Views Medicine," by The Honorable Richard M. Nixon, senator from California. The meeting is open to all physicians. Since the County Society Officers Conference is not to be held this year, county society officers in particular are invited.

American Heart Association Meeting.—The annual meeting of the American Heart Association will be held in Atlantic City, N. J., June 6 to 10 at Haddon Hall Hotel. The scientific sessions are scheduled for June 8 and 9. Chairmen of each of the four sessions include Dr. Howard B. Sprague, Boston, president of the American Heart Association; Dr. E. Cowles Andrus, Baltimore, chairman, program committee; Dr. T. Duckett Jones, New York, chairman of the American Council on Rheumatic Fever, and Dr. Arthur C. Corcoran, Cleveland, a member of the section on circulation of the scientific council. The annual dinner on Saturday will feature the presentation of Gold Heart Awards to physicians who have made outstanding contributions in advancing cardiovascular medicine and the program of the association. The American Council on Rheumatic Fever of the American Heart Association, composed of representatives of 12 national voluntary health agencies interested in this phase of cardiovascular disease, will hold its annual meeting on Sunday. The committee on cardiovascular clinics will hold its annual meeting on Friday evening to consider applications for the American Heart Association's Certificate of Approval given to those clinics meeting certain standards of service to heart patients. Preceding the annual meeting, June 3-5, a training institute will be held at the Hotel Morton for the executive staff of affiliated heart associations. The annual meeting of the staff conference of heart associations, composed of executive secretaries and other staff members of affiliates, will be held June 5.

Foundation to Evaluate Industry's Medical Services.—The American Foundation of Occupational Health is taking over on May 1 the evaluation of medical services in industry, which has been conducted by the American College of Surgeons for the past 20 years. The foundation is setting up a board of governors to guide in the new project. On this board will be three representatives each from the Industrial Medical Association (formerly the American Association of Industrial Physicians and Surgeons) and from the group of donors to the project; two from among outstanding business executives, and one each from the American College of Surgeons, American College of Physicians, American Medical Association, American Academy of Occupational Medicine, Association of American Medical Colleges, Association of American Schools of Public Health, and the Industrial Hygiene Foundation. The trustees of the American Foundation of Occupational Health are the president, secretary, and managing director of the Industrial Medical Association. Dr. Edward H. Carleton, medical director of Inland Steel Company, is the immediate past president and Dr. Adolph G. Kammer, South Charleston, W. Va., is the new president, installed at the annual meeting in Atlantic City late in April; Dr. Arthur K. Peterson, Chicago, medical director of R. R. Donnelley and Sons Company, is the secretary, and Dr. Edward C. Holmblad, Chicago, is the managing director and treasurer. The trustees propose to continue the same type of plant evaluation and approval that the American College of Surgeons has conducted. On its last approved list of medical services in industry, published on Dec. 31, 1950, the college includes the names of 1,459 industrial establishments, 63 per cent of the 2,293 plants, representing over 6,045,000 employees that had been surveyed. Dr. Gaylord R. Hess, Chicago, who has been in charge of the activity for the college, will continue to direct it for the American Foundation of Occupational Health.

Conference on Health Education.—Sponsored by the American Association for Health, Physical Education and Recreation and the Office of Education, this conference in Washington, D. C., March 19 to 21 was attended by representatives from some 60 organizations including the American Medical Association. The section on health education included consideration of health instruction, health services and healthful living for school and college children and youth. In general, conclusions were based on a philosophy that no radical changes are needed in what appears to be a long-term emergency; rather it is essential to do better the things long recognized as desirable in promoting the health of children and youth. Periodic medical examinations at about three year intervals for the school child, beginning with an examination on or before entrance to school, were recommended. Emphasis was placed on encouraging parents to have the examinations made by their own family physician, and it was suggested that priority should be given to the entrance examination. The importance of arranging for prompt examination of children who appear to have something wrong with their health was stressed. It was pointed out that cooperation between school nurses, teachers and other school personnel may result in much saving of physician time by singling out those children who need referral. The school's task in following up health needs was defined as one of stimulating parents to provide needed corrective and preventive measures and of sharing in community efforts to assure services for children whose parents cannot afford them. Recognition was given to the need for adjustment of teaching methods, seating arrangements and programs of children undergoing medical treatment. There was agreement on the importance of making suitable arrangements for meeting emergencies, which would involve providing first aid care, notification of parents and transporting ill or injured pupils when necessary. In the matter of control of communicable disease the need for cooperation with the local health department was stressed. The conference has been commended for its clear delineation of the functions of medical, educational and public health personnel in developing its suggestions on health services for school youth.

CORRECTION

Present Day Management of Amebiasis.—In Dr. Hamilton H. Anderson's discussion of the paper by this title in THE JOURNAL, March 17, 1951, page 789, the word "directly" in the tenth line from the bottom of this discussion should be "indirectly."

MEETINGS

AMERICAN MEDICAL ASSOCIATION, Atlantic City, June 11 to 15. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

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ALASKA TERRITORIAL MEDICAL ASSOCIATION, Ketchikan, May 31-June 1. Dr. William P. Blanton, Box 2569, Juneau, Secretary.

AMERICAN ASSOCIATION ON MENTAL DEFICIENCY, Hotel New Yorker, New York, May 21-26. Dr. Neil A. Dayton, P. O. Box 96, Willimantic, Conn., Secretary.

AMERICAN COLLEGE OF CHEST PHYSICIANS, Atlantic City, June 7-10. Mr. Murray Kornfeld, 500 N. Dearborn St., Chicago 10, Executive Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Atlantic City, June 10. Mr. W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN DERMATOLOGICAL ASSOCIATION, The Homestead, Hot Springs, Va., May 23-26. Dr. Louis A. Brunsting, 102 Second Ave., S.W., Rochester, Minn., Secretary.

AMERICAN DIABETES ASSOCIATION, Chalfonte-Haddon Hall, Atlantic City, June 9-10. Dr. John A. Reed, 11 W. 42d St., New York 18, Secretary.

AMERICAN ELECTROENCEPHALOGRAPHIC SOCIETY, Hotel Claridge, Atlantic City, June 16-17. Dr. John A. Abbott, Massachusetts General Hospital, Boston 14, Secretary.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION, Atlantic City, June 8-9. Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco 2, Secretary.

AMERICAN GERIATRICS SOCIETY, Hotel Brighton, Atlantic City, June 7-8. Dr. Malford W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

AMERICAN GOITER ASSOCIATION, Deshler-Wallick Hotel, Columbus, Ohio, May 24-26. Dr. George C. Shivers, 100 E. St. Vrain St., Colorado Springs, Colo., Secretary.

AMERICAN HEARING SOCIETY, Palmer House, Chicago, June 29. Mrs. Frances E. Lee, 817 Fourteenth St. N.W., Washington 5, D. C., Secretary.

AMERICAN MEDICAL WOMEN'S ASSOCIATION, Hotel Dennis, Atlantic City, June 9-10. Dr. Mildren C. J. Pfeiffer, Woman's Medical College of Pennsylvania, Philadelphia 29, Secretary.

AMERICAN NEUROLOGICAL ASSOCIATION, Atlantic City, June 18-20. Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

AMERICAN OPHTHALMOLOGICAL SOCIETY, The Greenbrier, White Sulphur Springs, W. Va., June 7-9. Dr. Maynard C. Wheeler, 30 W. 59th St., New York 19, Secretary.

AMERICAN ORTHOPEDIC ASSOCIATION, The Greenbrier, White Sulphur Springs, W. Va., June 20-23. Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

AMERICAN PROCTOLOGIC SOCIETY, Atlantic City, June 7-10. Dr. W. Wendell Green, 1838 Parkwood Ave., Toledo 2, Ohio, Secretary.

AMERICAN RADIUM SOCIETY, Atlantic City, June 6-9. Dr. John Wirth, U. S. Marine Hospital, Baltimore, Secretary.

AMERICAN RHEUMATISM ASSOCIATION, Hotel Dennis, Atlantic City, June 8-9. Dr. Charles Ragan, 620 W. 168th St., New York 32, Secretary.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY, Ritz-Carlton Hotel, Atlantic City, June 9-10. Dr. John O. Haman, 490 Post St., San Francisco 2, Secretary.

AMERICAN THERAPEUTIC SOCIETY, Atlantic City, June 8-10. Dr. Oscar B. Hunter, 915 Nineteenth St. N.W., Washington 6, D. C., Secretary.

AMERICAN UROLOGICAL ASSOCIATION, Palmer House, Chicago, May 21-24. Dr. Charles H. deT. Shivers, Boardwalk National Arcade Bldg., Atlantic City, N. J., Secretary.

ASSOCIATION FOR THE STUDY OF INTERNAL SECRETIONS, Chalfonte-Haddon Hall, Atlantic City, June 7-9. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City 3, Secretary.

CATHOLIC HOSPITAL ASSOCIATION OF THE UNITED STATES AND CANADA, Convention Hall, Philadelphia, June 2-5. Mr. M. R. Kneifl, 1402 S. Grand Blvd., St. Louis 4, Executive Secretary.

CONFERENCE OF PRESIDENTS AND OTHER OFFICERS OF STATE MEDICAL ASSOCIATIONS, Hotel Traymore, Atlantic City, June 10. Mr. John E. Farrell, 106 Francis St., Providence 3, R. I., Secretary.

GREAT FALLS MEDICAL-SURGICAL CONFERENCE, Great Falls, Montana, June 25-26. Dr. William E. Sullens, Box 1066, Great Falls, Chairman.

IDAHO STATE MEDICAL ASSOCIATION, Sun Valley, June 17-20. Dr. Robert S. McKean, 305 Sun Building, Boise, Secretary.

ILLINOIS STATE MEDICAL SOCIETY, Hotel Sherman, Chicago, May 22-24. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

MAINE MEDICAL ASSOCIATION, Poland Spring House, Poland Spring, June 17-19. Dr. Frederick R. Carter, 142 High St., Portland 3, Secretary.

MASSACHUSETTS MEDICAL SOCIETY, Hotel Statler, Boston, May 22-24. Dr. H. Quimby Gallupe, 8 Fenway, Boston 15, Secretary.

Medical Library Association, Denver, June 28-30. Miss Caroline Riechers, Rush Medical College Library, 1758 W. Harrison St., Chicago 12, Secretary.

North Dakota State Medical Association, Bismarck, May 19-22. Dr. O. A. Sedlak, 702 First Ave. S., Fargo, Secretary.

Oklahoma State Medical Association, Mayo Hotel, Tulsa, May 21-23. Mr. R. H. Graham, 1227 Classen St., Oklahoma City, Executive Secretary.

Society for Investigative Dermatology, Ritz-Carlton Hotel, Atlantic City, June 7-8. Dr. Herman Beerman, 255 S. 17th St., Philadelphia, Secretary.

Society for Vascular Surgery, Chalfonte-Haddon Hall, Atlantic City, June 10. Dr. George D. Lilly, 333 Ingraham Bldg., Miami 32, Fla., Secretary.

Society of American Bacteriologists, Chicago, May 28-June 1. Dr. John E. Blair, 1919 Madison Ave., New York 35, Secretary.

Society of Biological Psychiatry, Claridge Hotel, Atlantic City, June 17. Dr. George N. Thompson, 1136 W. Sixth St., Los Angeles 17, Secretary.

South Dakota State Medical Association, Aberdeen, June 2-6. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

INTERNATIONAL

European Congress on *Rheumatism*, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edström, Lund, Sweden, Secretary.

General Practitioners Study Club International, Rome, Italy, Sept. 12-15. Dr. John O'Connell, 10300 Lackland Road, St. Louis 14, Mo., U. S. A.

International Academy of Proctology, Atlantic City, N. J., U. S. A., June 7-8. Dr. Alfred J. Cantor, 43-45 Kissena Blvd., Flushing, New York, Secretary.

International Anesthesia Research Society, London, England, Sept. 3-7. Mr. R. W. Cope, University College Hospital, London W.C.1, England.

International Association of Allergists, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

International Congress of Anesthesiology, Nursing School of the Salpiettre, 47 Boul de l'Hospital, Paris, France, Sept. 20-22. 12 rue de Seine, Paris 6ᵉ, France, Secretariat.

International Congress of Clinical Pathology, London, England, July 16-20. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W.9, England, Secretary.

International Congress of Gynecology, Maison de la Chimie, Centre Marcellin, Paris, France, June 23-29. Dr. Maurice Fabre, 1, rue Jules-Lefebvre, Paris IX, General Secretary.

International Congress on Mental Health, Mexico City, Mexico, Dec. 11-19.

International Congress of Military Medicine and Pharmacy, Paris, France, June 17-23. Physician General Dutrey, 8, bis, rue de Recollets, Paris X, Secretary General.

International Congress of Orthopedic Surgery and Traumatology, Stockholm, Sweden, May 21-25. Dr. Anders Karlen, Karolinska Instituts Ortopediska Klinik, Stockholm, Secretary.

International Exhibition of Medical Arts, Turin, Italy, May 30-June 12. Prof. S. Teneff, Palazzo della Exposizioni al Valentino, Turino, Italy.

International Gerontological Congress, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

International Hospital Congress, Brussels, Belgium, July 15-21. Capt. J. E. Stone, 10 Old Jewry, London E.C., England, Secretary.

International Poliomyelitis Congress, Copenhagen, Denmark, Sept. 3-7. Prof. Dr. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

International Society of Angiology, Claridge Hotel, Atlantic City, N. J., U. S. A., June 9. Dr. Henry Haimovici, 105 E. 90th St., New York 28, Secretary.

International Society of Surgery, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

International Society for the Welfare of Cripples, Fifth World Congress, Stockholm, Sweden, Sept. 9-14. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

Pan Pacific Surgical Association Congress, Honolulu, Hawaii, Nov. 7-19. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

Students' International Clinical Congress, Leyden, Utrecht, Groningen and Amsterdam, Holland, July 10-28. N. A. M. Bergstein, Oude Gracht 143 bis, Utrecht, Holland, Secretary General.

World Confederation for Physical Therapy, Copenhagen, Denmark, Sept. 7-8.

World Medical Association, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Parts I and II.* Various Centers. June 18-20, Sept. 5-7 (Part I only). Applications must be filed at least thirty days prior to an examination. Ex. Sec., Mr. E. S. Elwood, 225 S. 15th Street, Philadelphia.

INTERNATIONAL COLLEGE OF SURGEONS

Examinations for Certified Fellowship in the United States Chapter in Urologic Surgery, Obstetrics and Gynecology and Proctologic Surgery, Chicago, June 1-2. Examinations will be given in General and Orthopedic Surgery, Chicago, Aug. 3-4. Sec., Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago 10.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: *Written.* July 20. Given simultaneously in several cities in the United States. Final date for filing application was Jan. 20. *Oral.* Memphis, Oct. 14-17. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn.

American Board of Dermatology and Syphilology: *Oral.* New York, June 8-10. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21, N. Y.

American Board of Internal Medicine: *Written.* Various centers, Oct. 15. Final date for filing applications was May 1. *Oral.* The schedule of oral examinations for 1951 has been arranged on a regional basis as follows: June, includes candidates from Beirut, Canada, Canal Zone, Connecticut, Delaware, District of Columbia, Maryland, New Jersey, Ohio, Pennsylvania, Puerto Rico, Rhode Island, Virginia and West Virginia. New York, date to be announced, covering Maine, Massachusetts, New Hampshire, New York and Vermont. San Francisco, date to be announced, covering Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Utah and Washington.

Only candidates who have not taken an oral examination can be admitted under the schedule arranged thus far.

Dates of closing dates for the filing of applications for examinations in New York and San Francisco to be announced.

Oral examinations in the subspecialties will be held at the same time and place and on the same distribution.

Exec. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3.

American Board of Obstetrics and Gynecology: *Written.* Feb. 1, 1952. Final date for filing applications is Nov 1. Sec., Dr. Paul Titus, 1015 Highland Building, Pittsburgh 6, Pa.

American Board of Ophthalmology: *Written.* Twenty-five centers, Feb. 4-5, 1952. *Oral.* New York, May 31-June 5; Chicago, October 8-13. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

American Board of Orthopaedic Surgery: Final date for filing applications for the 1952 Part II examinations is Aug. 15, 1951. Sec., Dr. Harry A. Sofield, 122 S. Michigan Ave., Chicago 3.

American Board of Otolaryngology: *Oral.* Chicago, Oct. 9-12. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

American Board of Pediatrics: *Oral.* Detroit, June 8-10. This examination replaces the one originally scheduled for Cleveland in June. Ex. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Physical Medicine and Rehabilitation: *Parts I and II.* Philadelphia, June 16-17. Final date for filing application was April 1. Sec., Dr. Robert L. Bennett, 30 N. Michigan Ave., Chicago.

American Board of Plastic Surgery: *Oral and Written.* Chicago, June 4-6. Final date for filing application was March 15. Sec., Dr. Bradford Cannon, 330 Dartmouth St., Boston.

American Board of Preventive Medicine: *Written.* San Francisco, October 28. *Oral.* San Francisco, October 29. Sec., Dr. Ernest L. Stebbins, 615 North Wolfe St., Baltimore 5.

American Board of Psychiatry and Neurology: Philadelphia, June 11-12. Final date for filing application was March 1. Sec., Dr. Francis J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Atlantic City, June 5-9. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written.* Various centers, Oct. 1951. Final date for filing applications is July 1. Sec., Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia.

American Board of Urology: Chicago, Feb. 9-13, 1952. Final date for filing applications is Sept. 1. Sec., Dr. Harry Culver, 314 Corn Exchange Bldg., Minneapolis 15.

DEATHS

Thom, Douglas Arthur ⊕ Boston; born in Boston Oct. 4, 1887; University of Vermont College of Medicine, Burlington, 1912; professor of psychiatry at Tufts College Medical School from 1928 to 1947, when he became emeritus professor; past president of the Massachusetts School of Occupational Therapy; consulting psychiatrist, Smith College, Northampton, from 1925 to 1932, and St. Paul's School, Concord, N. H., from 1928 to 1930; specialist certified by the American Board of Psychiatry and Neurology; member and past president of the Boston Society of Psychiatry and Neurology, American Psychopathological Association, Massachusetts Society for Mental Hygiene and the Massachusetts Psychiatric Society; member of the American Neurological Association, American Psychiatric Association and the New England Society of Psychiatry and Neurology; for many years director of the division of mental hygiene, state department of mental diseases; since 1921 director of the Habit Clinic of Child Guidance; honorary consultant to the surgeon general in neuropsychiatry; branch section chief in neuropsychiatric training, U. S. Veterans Administration; served overseas during World War I; a colonel and neuropsychiatric consultant of the Second Service Command at Governors Island, N. Y., during World War II; assistant pathologist at Monson (Mass.) State Hospital from 1912 to 1916 and director of the outpatient department of the Boston Psychopathic Hospital from 1920 to 1923; a trustee of the Walter Fernald School in Waltham; received the honorary degree of master of science in medicine from the University of Vermont in 1935; in 1928 awarded a medal by *Children, The Magazine for Parents* for his book for parents, "Everyday Problems of the Everyday Child"; author of "Mental Health of the Child," 1928, "Normal Youth and Its Everyday Problems," 1932, and joint author with Dr. Richard Smith of "Health, Physical, Mental and Emotional," 1936; worked extensively with the Children's Bureau in Washington and wrote many of the bureau's publications; died February 23, aged 63, of cancer.

Hopkins, Joseph Gardner ⊕ New York; born in New York June 30, 1882; Johns Hopkins University School of Medicine, Baltimore, 1907; since 1947 professor emeritus of dermatology at Columbia University College of Physicians and Surgeons, which he had joined in 1911 as assistant instructor of clinical pathology, subsequently serving as associate in bacteriology, assistant professor of bacteriology, assistant instructor in dermatology and professor of dermatology; bacteriologist for the American Red Cross Commission to Serbia in 1915; an officer in the Army medical corps during World War I; investigator for the committee on medical research, Office of Scientific Research Development, from 1941 to 1946; technical observer and consultant, Office of Field Service, 1945-1946 and civilian consultant to the surgeon general of the Army, 1945-1946; since 1946 consultant to the Veterans Administration hospital; consultant in dermatology to the Columbia Presbyterian Medical Center; member of the American Dermatological Association, American Academy of Dermatology and Syphilology, American Association of Pathologists and Bacteriologists, Society of American Bacteriologists, Society of Investigative Dermatology, New York Dermatological Society, American Mycological Society, Phi Beta Kappa and Alpha Omega Alpha; specialist certified by the American Board of Dermatology and Syphilology; died February 27, aged 68, of heart disease.

Yoder, Paul Allison ⊕ Winston-Salem, N. C.; born in Hickory, N. C., March 9, 1895; University of Pennsylvania School of Medicine, Philadelphia, 1923; assistant professor of clinical medicine at the Bowman Gray School of Medicine of Wake Forest College; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians and the American Trudeau Society; past president, a member of the executive committee and for many years a member of the board of directors of the North Carolina State Tuberculosis Association; past president and secretary-treasurer of the Forsyth County Medical Society; original secretary-treasurer of the North Carolina Trudeau Society; member of the committee which drafted "Diagnostic Standards" issued by the National Tuberculosis Association; formerly affiliated with the North Carolina State Sanatorium in Sanatorium; since 1941 consultant to the North Carolina Baptist Hospital; consultant and from 1929 to 1949 superintendent and medical director of Forsyth County Sanatorium, where he died February 12, aged 55, of cerebral vascular occlusion.

Price, James Woods ⊕ Saranac Lake, N. Y.; born in Albemarle County, Va., Jan. 30, 1877; University of Virginia Department of Medicine, Charlottesville, 1901; member of the American Trudeau Society and the American Clinical and Climatological Association, of which he had been president; a vice president and director of the National Tuberculosis Association; served during World War I; for many years president of the board of trustees and medical director of Reception Hospital, also known as Prescott House; since 1948 trustee of Trudeau (N. Y.) Sanatorium; attending physician at the General Hospital and instructor at the Trudeau School of Tuberculosis; from 1904 to 1908 affiliated with Stony Wold Sanatorium in Lake Kushaqua, N. Y., and Saranac Laboratory, where he was a member of the advisory committee; died February 24, aged 74, of hypertension and arteriosclerosis.

Dolezal, Charles Theopilus ⊕ Chicago; born in Cleveland Oct. 29, 1899; Western Reserve University School of Medicine, Cleveland, 1926; at one time instructor in medicine and assistant clinical professor of medicine at his alma mater; member of the American Hospital Association; formerly on the board of directors of the Cleveland Academy of Medicine and trustee of the Cleveland Hospital Council; served as director of public health and welfare of the City of Cleveland and as assistant superintendent and superintendent of City Hospital; became assistant director of the American Hospital Association and secretary of its Council on Professional Practice in May 1948; contributor to health and hospital publications; died in Passavant Memorial Hospital March 19, aged 51, of polycystic kidneys and uremia.

Phillips, William David ⊕ New Orleans; born in St. Francisville, La., in 1883; Tulane University of Louisiana School of Medicine, New Orleans, 1909; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; formerly professor of operative gynecology at New Orleans Polyclinic; had been connected with the Louisiana State University Medical School in a teaching capacity; consultant at Charity Hospital, where for many years he was visiting surgeon and at one time member of the board of administrators; first visiting surgeon and later consultant in gynecology and obstetrics, Southern Baptist Hospital; visiting surgeon, Hotel Dieu and Mercy Hospital; vice president of the Audubon Park Commission; died February 7, aged 67, of carcinoma.

Williamson, Hervey Clock ⊕ New York; born in 1887; University and Bellevue Hospital Medical College, New York, 1908; professor of clinical obstetrics and gynecology at the Cornell University Medical College; specialist certified by the American Board of Obstetrics and Gynecology; past president of the New York Obstetrical Society; fellow of the American College of Surgeons; attending obstetrician and gynecologist, New York Hospital; consulting obstetrician, Bellevue Hospital and New York Infirmary for Women and Children, New York, and Margaret Hague Maternity Hospital, Jersey City, N. J.; affiliated with French Hospital, where he died February 1, aged 63, of carcinoma of the prostate.

Beecher, William Lyman, Starkville, Miss.; born in Ohio June 25, 1870; Northwestern University Medical School, Chicago, 1901; formerly practiced in Chicago, where he had been clinical assistant in dermatology at his alma mater and from 1925 to 1936 member of the department of allergy at Post Graduate

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⊕ Indicates Fellow of the American Medical Association.

Hospital and Medical School; in 1929 joined the faculty of Loyola University School of Medicine in Chicago, where for many years he was clinical professor of medicine; past president of the Chicago Society of Allergy; member of the American Medical Association and Illinois State Medical Society; fellow of the American College of Allergists; died February 27, aged 80, of cardiac failure.

Page, Calvin Gates ⊕ Boston; born in Boston July 9, 1867; Harvard Medical School, Boston, 1894; an Associate Fellow of the American Medical Association; member of the American Public Health Association, Massachusetts Public Health Association, Society of American Bacteriologists, International Union Against Tuberculosis, and the American Trudeau Society; formerly assistant professor of bacteriology at his alma mater; from 1921 to 1926 associate professor at the Massachusetts College of Pharmacy; for many years research bacteriologist for the otolaryngology laboratory, Massachusetts Eye and Ear Infirmary; died in Brookline, Mass., February 25, aged 83, of hypertensive heart failure.

Elgin, Eugene, East Berlin, Pa.; Atlantic Medical College, Baltimore, 1909; member of the American Medical Association; past president of the Adams County Medical Society; for many years epidemiologist and division chief, state department of health; served as county medical director; past president of the Adams County School Directors' Association and for many years treasurer of the Adams County Firemen's Association; formerly county representative in the general assembly at Harrisburg; at one time school director, councilman and burgess; past president of the medical staff, Annie M. Warner Hospital in Gettysburg; died February 11, aged 64, of coronary occlusion.

McKelvey, Gilbert Johnston, Portland, Ore.; born in Kingston Ont., Canada, April 23, 1906; Queen's University Faculty of Medicine, Kingston, 1932; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons; associate clinical professor of orthopedic surgery at the University of Oregon Medical School; served during World War II; on the staffs of the Doernbecher Memorial Hospital for Children, Multnomah and St. Vincent's hospitals; affiliated with Portland Clinic; died in University Hospital, Minneapolis, February 27, aged 44, of hypernephroma of left kidney with metastasis.

Regan, James Sutton ⊕ Buffalo; born in Oswego, N. Y., Feb. 2, 1900; University of Buffalo School of Medicine, 1924; assistant professor of surgery at his alma mater; certified by the National Board of Medical Examiners; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; past president of the Buffalo Surgical Society; consulting surgeon, Buffalo Eye and Ear Infirmary and Wettlaufer Clinic; attending surgeon, Children's Hospital, where he was president of the medical staff, and Buffalo General Hospital, where he died February 17, aged 51, of hypertensive cardiovascular renal disease.

Scholtes, Harry John ⊕ Captain, U. S. Navy, retired, St. Petersburg, Fla.; born in Reeds, Minn., in 1892; University of Minnesota Medical School, Minneapolis, 1918; on March 26, 1923, was commissioned a lieutenant (jg) in the medical corps of the Navy; served in many hospitals throughout the United States, on ships of the active fleet and on foreign shore; his last active duty station was Naval Training Center, Memphis, Tenn., in 1944; retired from active duty in November 1944 because of physical disability; died in St. Anthony's Hospital February 11, aged 58, of coronary occlusion.

Armstrong, Ellery Leslie ⊕ Duluth, Minn.; University of Minnesota Medical School, Minneapolis, 1916; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; staff member of the Miller Memorial, St. Luke's, and St. Mary's hospitals; died January 2, aged 61.

Bieler, Leo, New York; Medizinische Fakultät der Universität, Wien, Austria, 1924; member of the American Medical Association; affiliated with Beth Israel Hospital, where he died February 20, aged 53, of secondary anemia.

Blount, William Thomas, Durant, Okla.; University of Arkansas School of Medicine, Little Rock, 1906; member of the American Medical Association; died in Durant Hospital February 11, aged 74, of coronary occlusion and arteriosclerosis.

Carter, Jonathan Basil, Wilson, Kan.; University of Kansas School of Medicine, Kansas City, 1910; member of the American Medical Association; served during World War I; lieutenant colonel in the medical reserve corps, not on active duty; for many years mayor of Wilson and state senator; affiliated with Ellsworth County Veterans Memorial Hospital in Ellsworth; died in Ellsworth February 4, aged 73, of cerebral hemorrhage.

Charlap, Fishel, New York; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1922; member of the American Medical Association; died February 15, aged 60, of coronary thrombosis.

Giddings, Charles Glenville Sr., Atlanta, Ga.; University of Virginia Department of Medicine, Charlottesville, 1884; member of the American Medical Association; died in Emory University Hospital February 24, aged 89, of acute leukemia.

Griswold, Arthur H. ⊕ Hartford, Conn.; Johns Hopkins University School of Medicine, Baltimore, 1906; affiliated with the Veterans Administration; died February 25, aged 71.

Gundrum, Willis H. ⊕ Canoga Park, Calif.; Western Pennsylvania Medical College, Pittsburgh, 1891; affiliated with Valley Hospital in Van Nuys; died February 12, aged 89.

Gwin, James Jefferson ⊕ Hartsville, Tenn. University of Louisville School of Medicine, 1931; died January 8, aged 44.

Hamsher, John Fremont, St. Paris, Ohio; University of Cincinnati College of Medicine, 1910; member of the American Medical Association; served during World Wars I and II; died March 1, aged 66, of carcinoma.

Harding, Carl William, Los Angeles; University of Kansas School of Medicine, Kansas City, 1937; member of the American Medical Association; served during World War II; died in Centinela Hospital, Inglewood, recently, aged 48, of myocardial infarction and coronary sclerosis.

Hatch, Trafton LeRoy, Cranford, N. J.; Syracuse University College of Medicine, 1901; died February 27, aged 75, of carcinoma of the stomach.

Hayes, Joseph David ⊕ Detroit; Detroit College of Medicine, 1908; served as chief of staff of St. Joseph Mercy Hospital, where he died February 20, aged 68, of arteriosclerotic heart disease and chronic nephritis.

Henson, Earl Bennette ⊕ Charleston, W. Va.; University of Louisville (Ky.) Medical Department, 1914; fellow of the American College of Surgeons; served during World War I; attending orthopedic surgeon, Kanawha Valley Hospital; visiting orthopedic surgeon, Charleston General, Mountain State Memorial and St. Francis hospitals; surgeon in charge, Marmet Hospital for Crippled Children, Marmet; consulting surgeon, McMillan Hospital; died February 10, aged 60, of coronary thrombosis.

Hersch, Thomas Franklin ⊕ Cedar Rapids, Iowa; State University of Iowa College of Medicine, Iowa City, 1914; past president of the Linn County Medical Society, of which he had been secretary; formerly deputy coroner and coroner of Linn County; affiliated with St. Luke's, Methodist and Mercy hospitals; editor of *Bulletin of Linn County Medical Society;* died February 12, aged 63, of heart disease.

Holland, Clell Gresham, Houston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1927; member of the American Medical Association; served during World War II; part owner of the Cleveland (Texas) Hospital and the North Houston Hospital; died February 18, aged 45, of heart disease.

Hoyt, Jesse Marion, Nokomis, Ill.; Marion-Sims College of Medicine, St. Louis, 1897; formerly postmaster of Fillmore; served during World War I; died in the Veterans Administration Hospital in Jefferson Barracks, Mo., February 18, aged 78, of coronary thrombosis.

Hughey, Albert Gesler, Dewar, Okla.; Memphis Hospital Medical College, 1891; died February 8, aged 81, of coronary heart disease.

Jack, Robert Berry, Mount Vernon, Ill.; Barnes Medical College, St. Louis, 1898; served during World War I; died February 28, aged 88, of cancer.

Jordan, James Ernest ⊕ Columbia, Mo.; University of Missouri School of Medicine, Columbia, 1895; member of the American Association of Industrial Physicians and Surgeons; died in Boone County Hospital February 26, aged 77, of uremia and arteriosclerosis.

Kirkpatrick, Lawrence Randolph, Ware Shoals, S. C.; North Carolina Medical College, Davidson, 1902; member of the American Medical Association; served during World War I; on the staff of Greenwood Hospital in Greenwood; died in Beaufort February 24, aged 71, of coronary occlusion.

Kleinpell, Henry Herman ⊕ Prairie Du Chien, Wis.; Rush Medical College, Chicago, 1900; also a graduate in pharmacy; member of the school board; formerly practiced in Chicago, where he was associated with Augustana, Children's Memorial, and St. Vincent's Infant and Maternity hospitals; served overseas during World War I; died in Tempe, Ariz., February 24, aged 81.

Lait, Francis M. ⊕ Cleveland; Baltimore Medical College, 1907; died January 31, aged 74.

Mabry, Samuel A., Kansas City, Mo.; Marion-Sims College of Medicine, St. Louis, 1897; also a graduate in pharmacy; served on the draft board during World War II; died March 1, aged 80.

McCall, John Turner, Rome, Ga.; Atlanta College of Physicians and Surgeons, 1904; member of the American Medical Association and the Southeastern Surgical Congress; fellow of the American College of Surgeons; affiliated with Floyd Hospital and McCall Hospital, where he was chief of staff; died February 11, aged 68, of suppurative colitis.

McCoart, Richard Felix ⊕ Providence, R. I.; Tufts College Medical School, Boston, 1913; member of the New England Obstetrical and Gynecological Society and the American Association of Industrial Physicians and Surgeons; served as president of the Rhode Island Society of Industrial Physicians and Surgeons; affiliated with Roger Williams and St. Joseph's hospitals; died February 25, aged 60, of carcinoma of the bronchus with metastases to the liver and the spine.

McDougall, Dan Campbell, Pocatello, Idaho; George Washington University School of Medicine, Washington, D. C., 1927; specialist certified by the American Board of Pediatrics; past president of the Pocatello Medical Society; on the staffs of the Pocatello General and St. Anthony's hospitals; died March 8, aged 51.

McGuire, Philip John, Barberton, Ohio; Loyola University School of Medicine, Chicago, 1932; member of the American Medical Association; served during World War II; on the staff of the Barberton Citizens Hospital; died February 23, aged 46, of heart disease.

McLaughlin, Clyde Lee Devillow, Vermontville, Mich.; Detroit College of Medicine, 1906; served during World War I; for many years president of the school board; died in Lakeland, Fla., March 25, aged 68, of myocardial infarction.

Mayes, Joseph Allen, Denison, Texas; University of Texas School of Medicine, Galveston, 1904; served on the school board; affiliated with Madonna Hospital, where he died January 16, aged 72, of coronary thrombosis.

Offner, John Edward ⊕ Fairmont, W. Va.; Maryland Medical College, Baltimore, 1904; formerly state health commissioner; an Associate Fellow of the American Medical Association; member of the American Psychiatric Association; veteran of the Spanish-American War; for many years superintendent of the Weston (W. Va.) State Hospital; died February 18, aged 71.

Owens, Samuel Logan, Washington, D. C.; Georgetown University School of Medicine, Washington, 1903; member of the American Medical Association; died in Georgetown University Hospital February 23, aged 72, of carcinoma of the stomach.

Paolazzi, Guido Erardo ⊕ Canton, Ohio; Medizinische Fakultät der Universität, Wien, Austria, 1899; served in the Austrian Army during World War I; died February 13, aged 76, of carcinoma of the prostate.

Parker, John Woodcock Jr. ⊕ West Hartford, Conn.; Yale University School of Medicine, New Haven, 1906; served as president of the board of health of Hartford; for many years medical adviser for public schools in Hartford; died in the Hartford Hospital February 6, aged 70, of myocardial infarction and congestive failure.

Pittman, James Harry, Camp Point, Ill.; Rush Medical College Chicago, 1901; died January 29, aged 72, of carcinoma of the urinary bladder.

Pratt, Charles Minter, Oklahoma City; University of Louisville (Ky.) Medical Department, 1905; member of the American Medical Association; died February 1, aged 75, of cerebral hemorrhage.

Price, Willard Arthur ⊕ Nappanee, Ind.; Medical College of Indiana, Indianapolis, 1895; an Associate Fellow of the American Medical Association; first mayor of Nappanee; for many years member of the school board; died February 16, aged 83, of carcinoma of the pancreas.

Pritchett, James Henry ⊕ Louisville, Ky.; University of Louisville Medical Department, 1911; associate clinical professor of pediatrics at his alma mater; past president of the Kentucky State Medical Association; served during World War I; on the staff of Kentucky Baptist Hospital, where he died February 1, aged 61, of coronary thrombosis.

Ransom, William Walter, Birmingham, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; member of the American Medical Association; died February 4, aged 82, of cerebral thrombosis and arteriosclerosis.

Reece, Barney F., Gause, Texas (licensed in Texas under the Act of 1907); died in Newton Memorial Hospital, Cameron, February 16, aged 77, of arteriosclerotic heart disease with decompensation.

Riemenschneider, Ernest W., Cleveland; Cleveland University of Medicine and Surgery, 1896; died February 5, aged 77, of arteriosclerotic heart disease.

Rowe, William Guy, Blue Springs, Mo.; University Medical College of Kansas City, 1900; served during World War I; died February 17, aged 71, of coronary occlusion.

Samson, Leon Loyal ⊕ Alexandria Bay, N. Y.; University of Vermont College of Medicine, Burlington, 1905; past president of the Medical Society of the County of Jefferson; health officer of the town of Alexandria and of the village of Alexandria Bay; president of the North Country Community Hospital in Glen Cove; member of the staffs of Good Samaritan and Mercy hospitals in Watertown; chief of staff of the Edward John Noble Hospital, where he died February 15, aged 72, of coronary thrombosis.

Saul, Henry Wilson, Kutztown, Pa.; Baltimore Medical College, 1894; member of the American Medical Association; deputy coroner for many years; past president of the Berks County Medical Society; for many years member and vice president of the school board; served on the staff of the Reading (Pa.) Hospital; director and vice president of the First National Bank; died February 12, aged 81, of carcinoma of the pancreas.

Schneider, Charles Augustus ⊕ Newark, N. J.; Baltimore Medical College, 1900; also a graduate in pharmacy; for many years on the staff of the Presbyterian Hospital; on the consulting staff of Irvington General Hospital and on the courtesy staff of St. Barnabas and St. Michael's hospitals; died February 2, aged 74, of lymphoblastoma.

Schwyzer, Gustav, Minneapolis; Universität Zürich Medizinische Fakultät, Switzerland, 1892; member of the American Medical Association and Western Surgical Association; fellow of the American College of Surgeons; affiliated with Northwestern Hospital and Minneapolis General Hospital; died in Biloxi, Miss., February 2, aged 83, of heart disease.

Scott, James R., Chula Vista, Calif.; Rush Medical College, Chicago, 1900; president of the Chula Vista Building & Loan Association; served during the Spanish-American War; for service during World War I was awarded the *Croix de Guerre* with a palm and other decorations; died February 18, aged 76, of carcinoma of the lungs.

Sharp, Robin Theodore, Columbus, Ohio; University of Cincinnati College of Medicine, 1938; member of the American Medical Association; on the staff of White Cross Hospital; died February 7, aged 40, of coronary occlusion.

Short, Willis Leland, Oklahoma City; Ensworth Medical College, St. Joseph, Mo., 1892; died February 1, aged 87, of hypertensive heart disease and nephrosclerosis.

Shortell, Joseph Henry ⊕ Boston; Harvard Medical School, Boston, 1916; fellow of the American College of Surgeons; served during World War I; instructor in surgery at Tufts College Medical School from 1920 to 1940; affiliated with Boston City Hospital; president of the Boston Orthopedic Club; died in Daytona Beach, Fla., February 3, aged 59, of acute myocardial infarction and coronary sclerosis.

Shurtleff, Fred Cazeaux, Los Angeles; Long Island College Hospital, Brooklyn, 1891; served on the staffs of the Good Samaritan, Methodist and General hospitals; died in the Veterans Administration Hospital, Sawtelle, February 26, aged 83, of cancer of the stomach.

Simon, Carleton, New York; Université de Paris Faculté de Médecine, France, 1890; Eclectic Medical College of the City of New York, New York, 1894; formerly deputy police commissioner; died in New York Hospital February 18, aged 79.

Smith, Claude A., Stockbridge, Ga.; Southern Medical College, Atlanta, 1898; formerly practiced in Atlanta, where he was for many years city bacteriologist and pathologist to the Grady Hospital; died February 8, aged 77, of heart failure.

Smith, Herbert Richard, Oakland, Calif.; College of Physicians and Surgeons, San Francisco, 1898; also a graduate in pharmacy; died in Washoe Medical Center, Reno, Nev., February 18, aged 80, of carcinoma of the liver and diabetes mellitus.

Smith, Walter Fox ⊕ Watertown, N. Y.; Cornell University Medical College, New York, 1921; fellow of the American College of Physicians; past president of the Jefferson County Medical Society; served as county physician; member of the board of the Children's Home of Jefferson County; a consultant on the medical staff of St. Lawrence State Hospital in Ogdensburg; held various positions on the staffs of Mercy Hospital and the House of the Good Samaritan, where he died February 3, aged 55, of cerebral hemorrhage.

Snyder, Frank Hassan, Geneva, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1915; member of the American Medical Association; served during World War I; county coroner; on the staff of Geneva General Hospital; surgeon for the Lehigh Valley Railroad; died February 3, aged 61, of hypertensive heart disease.

Stewart, Byron Lee, Beverly Hills, Calif.; University of Pennsylvania School of Medicine, Philadelpha, 1930; assistant clinical professor of psychiatry at the College of Medical Evangelists, Los Angeles; member of the American Psychiatric Association and the American Medical Association; served as president of the Los Angeles Society of Neurology and Psychiatry; formerly on the staff of the Compton (Calif.) Sanitarium; affiliated with St. John's Hospital in Santa Monica, where he died February 5, aged 47, of coronary occlusion.

Sullivan, Daniel John, Jr., Washington, D. C.; Georgetown University School of Medicine, Washington, D. C., 1950; intern at the Gallinger Municipal Hospital, where he died January 24, aged 26.

Sweeney, John Augustin ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1921; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; affiliated with Misericordia Hospital; died in Philadelphia General Hospital February 14, aged 55, of pneumonia.

Swett, Eddy Benjamin, Grasmere, N. H.; Harvard Medical School, Boston, 1889; member of the American Medical Association; served during World War I; later a lieutenant colonel in the medical division of the reserve corps until his retirement; on the staff of the Hillsborough County General Hospital; died February 22, aged 83, of arteriosclerosis.

Sykes, Everett William ⊕ Anahuac, Texas; Northwestern University Medical School, Chicago, 1908; died February 27, aged 68, of coronary occlusion.

Thompson, Lunsford Michael ⊕ Cashmere, Wash.; University of Louisville (Ky.) Medical Department, 1910; served in France during World War I; affiliated with Deaconess Hospital and St. Anthony's Hospital in Wenatchee; died February 7, aged 66, of the cardiorenal syndrome and coronary heart disease.

Tierney, Myles Joseph, Palm Beach, Fla.; Columbia University College of Physicians and Surgeons, New York, 1899; died in West Palm Beach, Fla., February 4, aged 76, of coronary thrombosis and pleurisy with effusion.

Todd, Melvin Brian, Hollywood, Fla.; Cleveland University of Medicine and Surgery, 1894; member of the American Medical Association and the Ohio State Medical Association; died February 14, aged 84, of cerebral hemorrhage and generalized arteriosclerosis.

Tucker, James Martin, Oakland, Calif.; Jefferson Medical College, Philadelphia, 1941; received the Bronze Star for meritorious service while serving with the 94th division in Germany during World War II; held a teaching fellowship in pathology at Northwestern University Medical School, Chicago; affiliated with the Veterans Administration Hospital; died in Piedmont, February 18, aged 36, of coronary occlusion.

Ultes, William Philip, Springfield, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; member of the American Medical Association; served as secretary of the Clark County Medical Society; affiliated with Springfield City Hospital; died February 13, aged 71, of pulmonary embolism.

Wayman, Armour Keach, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1905; member of the American Medical Association; superintendent of the Pualski County Hospital from 1941 to 1948; died February 6, aged 70, of gastroenteritis.

Wilbourn, Champion Ellis, Alex, Okla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899; died in Chickasha February 8, aged 88, of fracture of the right femur due to a fall.

Williams, Earl T., Greenbrier, Ark.; University of Arkansas School of Medicine, Little Rock, 1910; head of the Greenbrier Baseball School; died January 29, aged 70, of heart disease.

Wilson, Charles Edward, Blytheville, Ark.; Memphis Hospital Medical College, 1904; member of the American Medical Association; affiliated with Blytheville Hospital; died February 23, aged 82.

Wolf, Herman Emil ⊕ La Crosse, Wis.; Rush Medical College, Chicago, 1903; died suddenly on board ship off the coast of Rio de Janeiro, Brazil, in February, aged 71.

Wolfe, Edward Inman ⊕ Forty Fort, Pa.; Jefferson Medical College of Philadelphia, 1917; fellow of the American College of Physicians; affiliated with the Wilkes-Barre (Pa.) General Hospital; died February 16, aged 56, of myocarditis.

Wood, William Alva, Waco, Texas; Jefferson Medical College of Philadelphia, 1887; member of the American Medical Assotion and in 1905 member of its House of Delegates; in 1912 president of the Twelfth District Medical Society; died recently, aged 88.

Wright, Elbert Logan, Parkersburg, W. Va.; University of Nashville Medical Department, 1891; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; member of the American Medical Association; honorary life member of the West Virginia State Medical Association; on the staff of St. Joseph's Hospital; died February 10, aged 85, of arteriosclerotic heart disease.

Young, Herbert George, Detroit; Michigan College of Medicine and Surgery, Detroit, 1896; died in Woman's Hospital recently, aged 79, of coronary artery disease and essential arterial hypertension.

GOVERNMENT SERVICES

ARMY

To Call 105 Reserve Officers During June.—The Department of the Army has announced that 105 medical officers of the army medical service reserve will be ordered into the active military service during June. The 105 officers are in priority 1 as established by Public Law 779 of the 81st Congress. The officers will be given at least 30 days in which to close out personal and business affairs, unless they wish to report at an earlier date. This is the third group of medical officers of the army ordered into active military service since last December. In all, since the beginning of the Korean fighting a total of 2,304 medical corps reserve officers have been issued orders to active duty, and this total includes 1,264 priority 1 physicians.

Priority 1 for medical and dental reserve officers applies to those who participated as students in the army specialized training program, or similar programs administered by the navy, and those deferred from service during World War II to pursue a course of instruction leading to an education in medical and allied specialist categories or dental and allied specialist categories and who have had less than 90 days' active military service after completion of or release from the program or course of instruction.

The quota of 105 medical officers is being drawn from three Army areas: Fourth Army, 24; Fifth Army, 38, and Sixth Army, 43.

Government Pays for Training Psychologists.—The army's Senior Psychology Program has been extended for a period of three years, Maj. Gen. Raymond W. Bliss, surgeon general, announced. Eligible for participation are full-time students in clinical psychology who are attending universities accredited for training in clinical psychology by the American Psychological Association. Students in the second or third year of graduate training in clinical psychology may be eligible for appointment under the program. If accepted, the student is appointed as second lieutenant, medical service corps reserve, and receives the pay and allowances of that grade for a maximum of 24 months during the final period of graduate study. The third year of graduate work is served in an approved internship in one of the three army hospitals accredited as neuropsychiatric teaching institutions: Walter Reed in Washington, D. C., Fitzsimons in Denver and Letterman in San Francisco. Internship is supervised by a well-qualified psychologist. The fourth year is spent at the student's university completing the requirements for a Ph.D. On receipt of the degree of doctor of philosophy, the student may be tendered a commission as first lieutenant, regular army, medical service corps.

NAVY

Naval Industrial Health Conference a Success.—The third annual Naval Industrial Health Conference held April 22 to 27 in Atlantic City, N. J., was attended by 116 delegates from the naval industrial plants, the shipyards, air stations, ordnance plants, research centers, and supply depots that exist to provide the logistic support for the fleet. Among the delegates were naval officers who are responsible for the guidance of the navy's industrial health program, as well as civilian industrial hygienists, nurses, and safety personnel. Representatives from the U. S. Air Force, U. S. Army, Royal Navy, and the Royal Canadian Navy were also present.

With more than 250,000 civilian employees in its industrial plants and a combination of industrial hazards common to shipbuilding, ordnance, air, and research industries, ranging from exposure to industrial solvents to ionizing radiation, the navy has found it necessary to keep abreast of the latest developments in the field of industrial medicine and hygiene. The occupational health program provided the thousands of employees is more than mere compliance with laws and directives —it is recognized today as being a contribution to production.

The conference constituted a concentrated postgraduate course for the officers and civilians who are providing a health service that is contributing to the productive efficiency of the navy industrial facilities, a health program that is gaining recognition as being comparable to the best in private industries of comparable size and complexity.

Personals.—Rear Adm. Lamont Pugh, the surgeon general, addressed members of the senior class of the Jefferson Medical Center, Philadelphia, May 2 on "The Relation Between Dentistry and Medical Practice."

Capt. Robert W. Babione, MC, conducted a seminar on the preventive medicine program of the navy at the University of Pittsburgh school of public health May 9.

AIR FORCE

Aviation Medical Examiners.—More than 55 aviation medical examiners received diplomas May 5 at the Air Force School of Aviation Medicine, Randolph Field, Texas, after completing six weeks of intensive training. The class was composed of regular, National Guard, reserve, and foreign medical officers. Maj. Gen. Morrison C. Stayer, retired, now of Carlisle, Pa., former chief of public health and welfare in the office of the military government for Germany, delivered the graduation address.

Due to the expansion of the air force, the examiners' course was cut from 11 to six weeks duration, and because of this graduates do not receive their AME ratings until successfully completing a three-months supervised preceptorship. During this time each one must log 25 hours flying time in military aircraft, conduct 50 physical examinations for flying and be properly recommended for the rating. After the three-months preceptorship the graduates will be qualified for duty with air force units, where their primary duty will be to conduct physical examinations for flying.

The two foreign officers in the class were Capt. Hans K. Knoepfel of Switzerland and Capt. Ignacio D. Chavez of Nicaragua.

After acquiring his aviation medical examiner rating each graduate, after an additional year of field service and on recommendation, will become eligible for the rating of flight surgeon.

Temporary Promotions in Rank of General.—The following temporay promotions of medical service officers were confirmed by the Senate on April 11:

Brigadier general to major general, Dan C. Ogle and Wallace H. Graham; colonel to brigadier general, Clyde L. Brothers and Harold H. Twitchell.

Major General Ogle has been deputy surgeon general of the U. S. Air Force Medical Service since Dec. 1, 1949. Major General Graham is personal physician to the President and staff surgeon at Walter Reed Army Hospital. Brigadier General Brothers is presently air surgeon of the Far East Air Force. Brigadier General Twitchell is commanding general at Tripler Army Hospital in Hawaii.

DEPARTMENT OF DEFENSE

Defense Department Asks Selective Service System for More Doctors.—The Department of Defense April 23 asked the Selective Service System to provide the priority 1 doctors of medicine required by the military services for July, August, and September 1951. The call was placed because the number of priority 1 doctors volunteering for commissions is not expected to meet the requirements. The numbers requested are 717 for July, 333 for August and 152 for September.

Priority 1 doctors are those who received their medical education at government expense or were deferred from service during World War II to attend medical school and who have served less than 90 days in the armed forces, the Coast Guard or the U. S. Public Health Service. The Selective Service Act requires that all available and qualified doctors of medicine in the first priority be called before doctors in priority 2 are summoned. If the number of priority 1 doctors who volunteer increases, the number to be provided through selective service channels will decrease correspondingly.

Appoint Assistant Administrator.—Col. William L. Wilson, U. S. Army Medical Corps, has been appointed assistant administrator for Health and Welfare of the Civil Defense Administration. Since 1948, Colonel Wilson has been special assistant to the Surgeon General of the United States Army for Civil Health Affairs. Directing the Health Services and Special Weapons Division under Colonel Wilson will be Dr. Norvin C. Kiefer, former director of the Health Resources Office of the National Security Resources Board. Raymond T. Schaeffer, former associate national director of Disaster Services at the American National Red Cross, will head the Emergency Welfare Services under Colonel Wilson.

PUBLIC HEALTH SERVICE

Increase in Narcotic Addiction in Young People.—Officials of the U. S. Public Health Service revealed in testimony before an appropriations subcommittee of the House of Representatives in March that there has been a large increase in the number of young people admitted to the two hospitals of the Public Health Service where drug addiction is treated. According to the *New York Times*, Dr. G. Halsey Hunt of the Public Health Service said that in 1946 a total of 26 patients under 21 years of age were admitted to the Public Health Service hospitals at Lexington, Ky., and Fort Worth, Texas. This total increased to 700 in the last four months of 1950. To meet the need for more hospital beds the Fort Worth hospital plans to take 300 beds from veterans, Dr. Hunt said. It has been caring for about 500 service men who are neuropsychiatric patients. The Veterans Administration said that it had stopped sending veterans to the Fort Worth hospital and hoped to relinquish the 300 beds by July 1.

Dr. Jack Masur, chief of the health service's medical service bureau, related that the Lexington hospital was so crowded that there was no room to segregate the young first-time patients from older "repeaters." He said the larger number of teen-agers were coming from Chicago and New York.

Dr. Victor H. Vogel of the Lexington hospital said the number of applicants, some of whom came voluntarily while others were sent by courts, was so large there was a waiting list of 200. The young patients and first-timers receive preference. Dr. Vogel said that the narcotic heroin "has suddenly become easy to obtain near school grounds and in certain neighborhoods of large cities," and that many teen-agers switched to it from marijuana.

Examination for Sanitary Engineers.—Competitive examinations for the appointment of officers as sanitary engineers in the regular commissioned corps of the U. S. Public Health Service will be held in various cities August 6, 7, and 8. The examination will include professional written tests, an oral interview and a physical examination. Completed applications must be in the Washington office by July 9.

Appointments are permanent and provide opportunities for career service in research and public health activities. Appointments will be made in the grades of assistant and senior assistant, equivalent to Navy ranks of lieutenant (j.g.) and lieutenant respectively. Entrance pay for an officer with dependents is $4,486 in the assistant grade and $5,346 in the senior assistant grade, including rental and subsistence allowance. Applicants must have a bachelor's degree in engineering, preferably in civil, sanitary or chemical engineering, and must complete by May 1952 a total of at least three additional years of professional training and experience. At least two years of the required experience must have been in public health or an acceptable related field.

For information write to: Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C., Attention: Division of Commissioned Officers, DESK A.

Guide for Organizing Health Departments.—A guide for organizing local health departments in relation to community hospitals so that the two can operate as a community health team is set forth in a new publication of the Public Health Service entitled "Public Health Areas and Hospital Facilities: A Plan for Coordination." Authors of the study are Dr. Joseph W. Mountin, associate chief of the Bureau of State Services, and Clifford H. Greve, Division of State Grants, of the Public Health Service.

Health service areas are fully mapped out for each state. The maps depict how local health departments could be coordinated with existing or proposed hospital facilities planned under the national hospital survey and construction program. They also show how both community agencies could be included in a pattern of regional organization. Explanatory tables detail the basic staffing requirements for the suggested health units and the expenditures needed to put the plan into effect. Copies of the publication may be obtained from the superintendent of documents, Government Printing Office, Washington, D. C., at 60 cents per copy. The Public Health Service will distribute copies to state health officers, state administrators of local health services and to state hospital authorities.

Officer Specialists.—Of 672 regular corps medical officers on duty with the Public Health Service as of March 27, 1951, 216, or 33 per cent, had been certified by American boards, and 13 had completed part of their examinations. The number of officers certified in each of the specialties follows: anesthesia, 2; dermatology and syphilology, 5; internal medicine, 20; otolaryngology, 3; ophthalmology, 3; orthopedic surgery, 1; pathology, 11; pediatrics, 2; preventive medicine and public health, 120; psychiatry and neurology, 24; radiology, 8; surgery, 16, and urology, 1.

MISCELLANEOUS

Visitors' Day at Brookhaven—The Cosmotron.—Visitors' day at Brookhaven National Laboratory in Upton, L. I., N. Y., May 6 was arranged in response to requests by various groups for permission to see the atomic laboratory. The tour, limited to nonsecret portions of the laboratory, included visits to the biology department, meteorological station and three particle accelerators—cosmotron, cyclotron and electrostatic accelerator. There also was a demonstration of radiation protection equipment and techniques and a showing of movies on atomic energy subjects. About 1,000 high school and college students and members of various civic organizations participated.

The 2,200-ton magnet of the cosmotron has recently been completed, and tests at full power of 40,000,000 watts have been successful. Supporting elements, such as accelerating, radio frequency and vacuum systems, are now being added. The cosmotron, so named because it will be used to produce artificial cosmic rays, is designed to speed protons to an energy exceeding 2,000,000,000 electron volts, or five times that of the most powerful existing accelerators. These protons (nuclei of hydrogen atoms) will strike various targets, including copper and hydrogen. Collisions at such energies are expected to yield data on the forces between protons and neutrons in atomic nuclei.

Brookhaven is the northeastern center for nuclear research and development and is operated under contract with the AEC by Associated Universities, Inc., a nonprofit, educational corporation sponsored by nine leading eastern universities. The laboratory's participation in the AEC's national program is twofold: primarily, it consists of long-term fundamental studies of atomic energy, but at the same time a portion of its research is directed toward immediate assistance in national defense.

FOREIGN LETTERS

ITALY

Tensiography of Auricle and Ventricle.—At the World Congress of Cardiology, in Paris, Professor Condorelli, director of the medical clinic of the University of Catania, reported on the principles and technique of tensiography of the auricles and ventricles. He stated that the methods for graphic recording of auricular and ventricular pressures used at present do not permit prolonged recordings. The new system consists in enclosing in the cardiac chamber an air bubble connected by airway with a water or mercury manometer. The movements of the fluid in the manometric tube are directly registered with the tensiograph. Catheters impermeable to air have been constructed, equipped at one end with a very fine rubber capsule that can hold 2 cc. of air without being in tension. Error through deformation caused by the air medium is negligible, owing to the small amount of air contained in the transmission system, which has a rigid structure. With the apparatus described, the auricular, ventricular and venous pressures may be recorded simultaneously for an indefinite period together with, for example, respiration and pulse.

Professor Condorelli with Drs. Turchetti, Schirosa and Strano, of the University of Catania, reported the first results obtained by clinical use of auricular and ventricular tensiography.

It was observed that auricular tension is influenced by respiratory activity, the auricular systolic variations being covered by the more ample respiratory oscillations of the auricular pressure. Apnea induces a progressive rise in intra-auricular pressure, increased by expiratory efforts, while the pressure is lowered by deep inspirations. A noticeable increase of the auricular pressure follows raising of the lower extremities and the injection of epinephrine. In conditions of circulatory insufficiency accompanied by plethora, the auricular pressure increases when fibrillation exists, unless conditions are simultaneously present which prevent the transmission of variations of respiratory tensions to the auricles. Ventricular diastolic pressure is similar to auricular pressure. Variations of the right systolic ventricular pressure depend not only on intrathoracic variations of pressure but also on the functional state of the myocardium. In some cases, a negatively inotropic inspiratory reflex occurs.

Methionine Therapy.—Professor Campanacci, of the University of Parma, discussed the use of methionine in liver disease. He stated that among the various sulfur-bearing amino acids, methionine has the advantage of supplying methyl and sulfhydryl (SH) groups. To the methyl group of methionine must be ascribed only the property of transmethylating fats, while all the other actions protecting the liver, such as glycogen fixation, sulfur oxidation and sulfur conjugation, must be attributed to the sulfhydryl group.

Although methionine represents the lipotropic substance of choice, other substances should not be neglected in the treatment of liver diseases, including other sulfur-bearing products as well as the pellagra-preventing factor (nicotinic acid), dextrose, adrenal hormones and thiosulfates. In fact, while methionine does not present any protective action against acute alloxan poisoning, cystine protects against chemical diabetes, sodium thiosulfate has certainly an antiallergic action not possessed by methionine, and other products are superior to methionine as detoxicating agents in poisoning from heavy metals.

Investigations carried on by Professor Campanacci's school suggest that sodium thiosulfate alone is capable of protecting the liver against nutritional steatosis, better than methionine itself, and with an intensity of action equaling that of inositol. The methionine dosage must be sufficiently high (from 2 to 3 Gm. in 24 hours); parenteral or rectal administration of the drug is preferred, since its reabsorption may be insufficient in the presence of a liver disease.

In view of the fact that methionine acts on the fatty degenerative and necrotic components of the diseased liver, and not on the vascular lesions or on those of the connective tissues, satisfactory results may be obtained only by use of this drug in the preascitic phase of cirrhosis.

Public Health Problems Before Parliament.—Many public health problems were recently discussed in the house of representatives and in the senate in Italy. One concerned the revision of the category classification of various hospitals. Since the end of the war, the Italian civilian hospitals have been in an unstable position, caused by slow and expensive reconstruction. The revision of the classification in categories will be done after the period of reconstruction.

Senator Lamberti questioned the high commissioner of hygiene and public health about the advisability of modifying the present legislation so that the competitions for municipal doctors would be completed more promptly and the present unsatisfactory state of interim functions be avoided. The high commissioner said he had ordered the contests for municipal doctors to be held every six months rather than every year and the assignment of all the municipal doctors entering the contests within six months after publication of the graduated list.

Some senators introduced bills dealing with rules of the professional practice of dental technicians and workers in dentistry. These proposed laws have their basis in the particular importance that dentistry has assumed lately. The proposed law envisages the establishment of special schools for dental technicians and the institution of provincial registration for dental technicians fixing the duties and limits in the practice of dental technique and auxiliary dental handicrafts.

Professor Donatelli.—The faculty of medicine and surgery of the University of Naples has appointed Prof. Leonardo Donatelli to the chair of pharmacology. Born in Aquila (Italy) in 1911, Professor Donatelli was formerly assistant at the institute of pharmacology of the University of Florence, under Prof. Aiazzi Mancini.

Donatelli has published 168 original contributions to pharmacology, pharmaceutical and biological chemistry, anatomy and physiology. For the last years, he has been particularly interested in the toxicity and secondary effects of streptomycin. He has completed, also, comparative studies on the activity and secondary effects of synthetic antihistaminic drugs.

DENMARK

Mentality of Danes.—In a study illustrated by several tables and graphs, Dr. Alf Yde compared the mentality and behavior of Danes, Dutchmen and Finns (Reflections on the Use or Misuse of Medicine in Holland, Finland and Denmark). It is evident from this study that there are certain profound psychological and ethical differences between Danes and Dutchmen, as witness, for example, the far higher divorce rate in Denmark. Here, in 1937, it was 0.89 per thousand, whereas it was only 0.40 in Holland. In 1941, during the occupation of both countries by the Germans, the divorce rates per thousand in Denmark and Holland were 0.97 and 0.37, respectively. In 1948, Denmark was still much ahead of Holland in this respect, with 1.69 as compared with only 0.83 divorces per thousand. Another comparison concerns illegitimacy. In 1945, 10 per cent of the babies born in Denmark were born out of wedlock, whereas in Holland the figure was 1 to 2 per cent. Dr. Yde takes both divorces and illegitimate offspring to be a measure of the relative inferiority of the Dane in the field of mental hygiene.

Another touchstone by which he measures the mental level of Danes is their suicide rate, which is appallingly high both absolutely and in comparison with that in Holland and, to a less extent, in Finland. In 1948 in Denmark there were 251 suicides per million inhabitants. The corresponding figure for Holland was 66; for Finland it was 159. This tendency to commit

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The items in these letters are contributed by regular correspondents in the various foreign countries.

suicide in Denmark has been notorious for the last hundred years and is said to reflect a high rate of manic-depressive constitutions. It has been calculated that the over-all insanity rate is much the same in Denmark and Finland, but the manic-depressive psychoses occur in 0.13 per cent of the Danish population and only in 0.025 per cent of the Finnish population. Another comparison concerns the consumption of the drugs of addiction in Denmark, Holland and Finland. In 1947, the consumption of codeine in Denmark was 277.9 Kg. per million inhabitants. The corresponding figure for Holland was only 48 and for Finland 94.5. Even in the choice of the method of committing suicide, Denmark, with her preference for hypnotics, differs from some of her neighbors. Dr. Yde concludes that the high consumption of codeine and morphine is indicative of a far higher incidence of mental depression in Denmark than in Holland, which for long has had a very low suicide rate.

Danish Red Cross Hospital Ship.—On January 23 the *Jutlandia* left Denmark bound for Korean waters. A year ago it belonged to the Danish merchant service, and its conversion into a hospital ship was an emergency decision taken after the outbreak of hostilities in Korea. In its issue for March 1951, the Danish Red Cross magazine has published an account by Dr. Karl Lehmann of this remarkable achievement. Some 500 men were employed on the operation of conversion and fitting out hospital accommodation for some 300 patients. Three elevators are provided for the transfer of patients from one deck to another. Space is provided for some 2,000 tons of water as well as an apparatus for converting 20 tons of salt water to fresh water every 24 hours. On one of the decks there is a dining room for the hospital staff of 93 persons. There are several operating theaters, one of which is for general surgery, another for lung surgery and another for work such as blood transfusion and changing bandages. Special provision is made for dentistry, including surgery of the jaws and face. Another operating theater is reserved for brain surgery. On the advice of American experts, accommodation has been provided for psychiatric cases, including three padded cells. A motor ambulance and various other motor vehicles are provided in order that the hospital ship can take over some of the duties of a land transport service in an emergency. Accommodation is also provided for the isolation of infectious cases. Commander Hammerich is in charge of the ship. He has had many years' experience as the head of the Danish National Red Cross Society.

Biologic Tests for Pregnancy.—Two biologic tests for pregnancy (the Galli-Mainini test on toads and the Friedman test on rabbits) have now given so much satisfaction that they have been adopted as a matter of routine in the Hormone Department of the State Serum Institute, to which samples of urine may be sent by doctors in doubt over the presence or absence of pregnancy. They are requested to accompany each sample of urine with a statement as to which of the two tests they prefer. The charge for the toad or bufo test (B.R.) is 15 kroner and for the rabbit or Friedman test (F.R.) 30 kroner. In his latest report on the subject, Dr. G. V. Thorborg, of the State Serum Institute, compared the two tests, whose specificity and reciprocal corroboration are quite remarkable in view of the familiar observation that biologic tests tend to be just short of 100 per cent in accuracy.

In the Galli-Mainini test, three sexually mature male toads are used after a microscopic examination of their urine has shown it not to contain spermatozoa. Two milliliters of the suspect urine, which should be as fresh as possible, but need not be morning urine, is injected under the skin of the toad's back, a second injection of 1.5 ml. being given an hour later. Three hours after the last injection a catheter specimen of the toad's urine is examined under the microscope. This now shows myriads of spermatozoa if the urine comes from a pregnant woman. In the Friedman test, virgin female rabbits are used after they have been isolated for four to five weeks. To make sure that there are no spontaneous changes in their ovaries, most rabbits undergo an exploratory laparotomy two days before the test. Ten milliliters of the suspect urine is now given by intravenous injection in the rabbit's ear, and 40 to 48 hours later the rabbit is killed and its ovaries are examined. The reaction is regarded as positive when the ovaries are found to be enlarged, hyperemic and the seat of ovulation points and numerous follicles containing blood.

Between April 26, 1950 and Jan. 19, 1951, more than 2,000 pregnancy tests have been carried out on toads at the State Serum Institute, more than half of them being supplemented by the Friedman test. Dr. Thorborg points out that not one of these tests on toads yielded a false positive reaction. The toad test is the quicker and cheaper, but the rabbit test may yield a positive result earlier in pregnancy. As a rule, the Friedman test elicits a definitely positive reaction about eight days after the first missed menstrual period and the Galli-Mainini test about 14 days after. Toward the end of pregnancy the Friedman test is probably the more reliable of the two. In cases of extrauterine pregnancy the Friedman test is again the more reliable. With these three reservations it may be said that the two tests are equally reliable. The Galli-Mainini test possesses the advantages of quickness (taking 24 hours instead of the 40 to 48 hours needed for the Friedman test), comparative technical simplicity and the modest housing accommodation required for toads. From the gynecologic department of the Frederiksberg Hospital comes a report by Dr. C. F. Felding on his instructive experiences with the toad test.

Death of Dr. C. I. Baastrup.—The death of the Danish radiologist Dr. C. I. Baastrup at the comparatively early age of 65 was due to cancer of the larynx, from which he had suffered for about a year. It was characteristic of his tenacity of life that he was at work in his hospital till the day before his death. His many technical studies and devices, accounts of which he published from time to time, gave him a well earned international reputation. The condition known abroad as "Kissing's spine" is called "morbus Baastrup" in the Scandinavian countries. The care and skill with which he created and administered the radiological department of the Bispebjerg Hospital reflected his genius for technical detail and for getting the best out of his subordinates. His genial personality made him a most charming host for the many countrymen and foreigners to whom he opened his doors.

SWEDEN

Perforated Gastric and Duodenal Ulcer Statistics.—In 1942 and again in 1945 Dr. Gustaf Petrén of Lund published comprehensive statistical studies of gastric and duodenal ulcers in Sweden. In *Svenska Läkartidningen* for April 6, 1951, he reported an investigation covering all of Sweden and drawing on the reports of 125 hospitals and various other sources. The number of cases of perforated ulcer coming to operation has increased enormously since 1930. In the five year period 1930-1934, the annual number of such cases per 100,000 inhabitants was 7.4. During the next five year period this figure had risen to 8.8, and in the six year period 1943-1948 it was up to 11.5. Again, the incidence of perforated ulcers coming to operation during the five year period 1944-1948 in a total of 28 hospitals varied greatly in accordance with whether the area concerned was urban or rural. Thus the annual incidence of these cases per 100,000 was as high as 16.2 in the city of Stockholm, whereas it was only 7.4 in the county of Blekinge. In the opinion of Dr. Petrén, this comparative immunity of a rural area was largely due to the peaceful rhythm of country life, with its stable composition and timing of meals. In 1935 only 34% of the population of Sweden was urban, whereas in 1946 this was the case with 43%. Between 1935 and 1946, the rural population of Sweden diminished while its urban population increased from a little over 2 million to nearly 3 million. By moving from the country to a town, the inhabitants of Sweden seem to incur a much greater risk of a perforated gastric or duodenal ulcer.

However, if between 1930 and 1948 the annual incidence of perforated ulcers has risen per 100,000 inhabitants from 6.9 to 12.1 for the whole of Sweden, it is consoling to find that in the same period the annual postoperative mortality has fallen from 21.4 to 10.1%. This striking improvement can be traced not so much to better facilities for transport and early operation as to modern methods for combating shock and infections. In 1947 the Sahlgren Hospital in Gothenburg did not have a single death among its 45 surgical cases of perforated ulcer.

Meeting of World Medical Association in Stockholm.—The organ of the Swedish Medical Association, *Svenska Läkartidningen*, reminds its readers from time to time of the chief items of interest in connection with the annual meeting of the World Medical Association (WMA) to be held in Stockholm Sept. 9-23, 1951. The council of the World Medical Association meets September 9-14, and the general assembly September 15-20. Representatives of the medical press are to meet on September 21, and the council is to meet again September 22-23. The arrangements for the meeting are in the hands of the international committee of the Swedish Medical Association. It is expected that most of the some 40 national medical associations, of which WMA is composed, will send one or two regular delegates and some will also send deputies and observers. Important international organizations, such as WHO, UNESCO and ILO, will be invited to send observers. When the wives of delegates are also counted, more than 200 persons will participate in this meeting. The general assembly will be held in the second chamber of the Riksdag and will deal, among other things, with medical education, sociomedical problems and cooperation between the medical world and certain bodies belonging to UNO. A special committee of the WMA is planning an international congress with medical education as its main theme. Another special committee is dealing with material collected from the sociomedical sphere of interest with particular reference to the points of view that have emerged during discussions in WHO and ILO. The Swedish Medical Association will be represented at the meeting of WMA by two delegates and two deputies. Each local branch of the Swedish Medical Association is invited to nominate an observer. Every member of the Swedish Medical Association will also be allowed to attend most, if not all, meetings of the general assembly.

Spiritual Welfare of Hospital Patients.—In 1950 the Swedish Medical Association was invited to draft a memorandum on spiritual welfare of hospital patients for the head of the government. This memorandum has now been published. Here it is pointed out that the discussion should not be limited to purely religious activities, but should be extended so as to embrace cultural problems in general. Reference is made to an inquiry on the subject addressed to 1,350 patients in various hospitals and sanatoriums in different parts of Sweden. The interest taken in this inquiry was so great that only 264 of these patients failed to send in an answer. Some 700 stated that they listened to the morning prayers on the wireless. Great interest was also taken in the sermons of hospital chaplains, and, while some 750 were anxious to listen to these sermons, there were only a little over 100 who took the opposite view. Only 46 patients expressed disapproval of religious services in hospital in principle, whereas some 960 held appreciative views on this subject. The patients were also invited to comment on the practice of a hospital chaplain going the round of hospital wards chatting with each patient. Most of the answers were in favor of this practice. Representatives of the Swedish Medical Association are also in favor of a hospital chaplain's being authorized to meet the needs not only of hospital patients but also those of the hospital staff.

Acute Anterior Poliomyelitis in 1950.—In a report issued by the Swedish ministry of health, a statistical account is given of the cases of poliomyelitis that occurred in 1950. An encouraging feature of this report is the improvement effected in the institutional provision made for paralytic cases, of which there were 1,279 reported in 1950. In the same period 490 nonparalytic cases were also reported. There were 129 deaths from poliomyelitis, i. e., about 10% of all the paralytic cases. In 209 cases, i. e., in 16% of the paralytic cases, the paralysis was of the bulbar type, and 133 of these patients were nursed in a respirator or iron lung. In 94 of these cases the disease proved fatal. This mortality of 71% is bad enough, but it compares favorably with earlier years, during which the mortality was 85 to 90%. Another change for the better is the fact that only six patients in need of after-care had to be sent home because such care could not be provided within a reasonable time. Such confession of defeat had to be made in 5 to 10% of the cases treated in 1948 and 1949 and in need of after-care. Among the 58 patients on whom tracheotomy was performed there were 24 who survived. To facilitate a comparison of these figures with the corresponding figures for other countries, it should be noted that the population of Sweden is now 7 million.

Death of Prof. Hjalmar Holmgren.—A singularly promising scientific career has been cut short by the death of Prof. Hjalmar Holmgren on February 21 at the early age of 45. As long ago as 1936 he published an important study of the daily variations in the fat content of the liver and other organs. In 1937, in conjunction with Jorpes and Wilander, he gave an account of investigations concerning the production of heparin by giant cells. He devised a new method for fixing giant cells and investigated their distribution in different parts of the body and under various conditions. His promotion in 1947 as a professor was related to his organization of a department for experimental histology at the Karolinska Institute in Stockholm. He had already made this department a most effective center for scientific research in various fields, including biochemistry and endocrinology. In the field of experimental endocrinology he made important contributions to the study of the thyrotropic hormone and of the growth of experimental tumors. His happy combination of youthful enthusiasm with a mature critical sense made him the ideal leader of a group of research specialists devoted to team work. Of a family that has endowed the medical world with many of its most distinguished members, Holmgren was a happy illustration of the benefits of heredity.

TURKEY

Semple Vaccine Prophylaxis in Rabies.—In the Turkish *Journal of Hygiene and Experimental Biology*, Dr. Abdulkadir Çilesiz reviews 16 years of antirabic prophylactic therapy by the Semple vaccine phenol method. When in June 1932 the Ankara Refik Saydam Institute of Hygiene was established, an antirabic institute was soon added. Dr. Abdulkadir Çilesiz, who gained his experience in the Pasteur Institute in Paris, became its chief. He introduced the Semple vaccine phenol method, and within less than six months 79 persons received the treatment. Before 1932, persons in need of prophylactic treatment were sent to the antirabic institute in Istanbul, Izmir and Sivas. Then the original Pasteur method was employed and later the Högyes as well as the modified Högyes-Philips method. In 1933 antirabic stations where the Semple vaccine method was employed functioned in 26 cities. There were no deaths or paralytic complications. The vaccine had been prepared by Dr. Abdulkadir Çilesiz at the Ankara Refik Saydam Institute of Hygiene antirabic department. At present there are 82 antirabic centers in the 63 provinces in which the Semple vaccine phenol method (14-20-24 days) is the only method employed. From 1933 to 1935, 2,989 persons received the treatment; 10 persons (0.32 per cent) died; no paralytic complications were observed. According to statistics published in 1935 in the *Bulletin of Hygiene* (League of Nations), of 59,804 persons who during 1933 were given the Semple vaccine phenol treatment at the world antirabic institutions, 259 persons (0.43 per cent) died; there were paralytic complications in four persons, two of whom recovered.

From 1933 to 1948, 55,219 persons received the Semple vaccine phenol treatment at the Ankara antirabic center. There were 70 deaths (0.10 per cent). Twelve patients (0.02 per cent) had paralytic complications; two of these patients died. In comparison, according to antirabic statistics of the World Health Organization, of the 135,058 persons who received antirabic treatment during 1935 to 1937, in the 102 antirabic institutions in many parts of the world, 487 persons (0.36 per cent) died. In addition, there were 20 patients who had paralytic complications, resulting in three deaths.

Health departments in urban communities are engaged in a continuous campaign for the extermination of stray cats and dogs, but in rural communities this is difficult. People are well aware of the danger of rabies and at the slightest danger apply for prophylactic treatment. At veterinary stations persons can have their pets vaccinated free of charge.

CORRESPONDENCE

URGICAL TRAINING

o the Editor:—The major aim of all medical teaching is to sure the best possible care for the patient. In surgery this aim as been particularly expressed in the postgraduate training proram. The evidence for the developing attainment of this goal s at hand. The most striking evidence is the splendid record of well trained young civilian surgeons in military service during World War II. Every year more and more graduated residents are choosing the smaller communities for practice wherever good hospital facilities are present or in prospect. Although there are still far from enough men of first rate background to carry out all the operations that are daily performed n this country, yet striking progress has been made and there s justified hope that within a reasonable period a well trained urgeon will be available to every citizen. During the past few years a threat to the realization of this program has arisen which demands the attention of every physician interested in the highst ideals of surgical practice.

The major steps in the developments up to the present time re three. The first was the promulgation by Halsted in the nineties of the principles of adequate surgical training, principles which with certain modifications still stand today in the orm of the resident system. The second was the acceptance of control of hospital staffs through the principle of the closed hospital which began to receive widespread recognition in the first decades of the present century. Anyone who practiced through that period knows what a revolution this change effected in the practice of surgery. The quality of surgical performance in the closed hospital improved beyond measure. Outside the closed hospital jealousies and bitterness were often extreme. Those who believed in the principle regretted these emotional reactions but were willing to accept the burden of blame for the sake of their ideals for patient care. Perhaps in some instances there was truth in the unbridled accusations that the hospital staff was closed for the sake of the practitioner and not for the sake of the patient. It would be unwise to believe that the closing of hospital staffs throughout the country was motivated by selfishness alone. Finally, the establishment of accrediting boards to define the knowledge and accomplishments of aspirants to surgical practice completed the triad. In including this step as one of the three, one makes no assumption that the operations of the boards have been without mistake or that there are not safe and able surgeons outside the pale of the certificated. The influence of the principle of certification on the whole has been good; the boards have set standards by which every young man of the last 10 years who is looking toward perfecting himself in surgery has been able to guide his steps.

In citing the major stages of progress, the work of the American College of Surgeons in improving hospital organization and practice cannot be omitted. However, until recent years, the standards set by the founders of the college to justify admission to fellowship were not at the level of Halsted's ideals and the college did not fully function as a stimulus to self improvement. With recent developments, it is now taking its proper place.

It has been necessary to present this brief history of progress in surgical training and in the conditions of surgical practice as a background to the discussion of certain retrograde tendencies now obvious. If one were not aware of the pain and self sacrifice and effort that have gone into the attempt to improve surgical practice, one would not clearly see the potentially tragic effects of some powerful segments of current medical thought. The tragedy lies in a threat to good surgical care.

Despite the anachronistic standards of state licensing boards, the performance of surgical operations by an untrained man should now be considered obsolescent if not obsolete by both the public and the medical profession. It is the duty of the latter to convince the former of that truth. Unfortunately, a considerable portion of the profession is expressing itself more and more articulately to the contrary.

The reference, of course, is to the matter of "general practice," an unfortunate term that has persisted into a different sort of medical age from the time when it had real significance. Its persistence is understandable in the light of the affection and honor that in times past were woven about it. But the term has now lost its original meaning; its continuing use leads to the championing of unwise prerogatives. No one man can care for all disease, and the good "general practitioner" of today does not try to do so. Among the things that he is eager to give up to the specialist is surgery. One can hope that the term "family doctor" will replace the outworn designation; the "family doctor" should be a man trained in internal medicine primarily, who will practice the very best of that discipline and will recognize when the surgeon should be called.

No one with any respect for the medical profession as a whole or with any hope for its rehabilitation in the eyes of the public will decry the present efforts to reestablish the prestige of the family doctor or will refuse to share in the attempt to improve the conditions of his training and practice so that first rate diagnosis and the adequate care of most diseases will be available in the most remote hamlet. But such a frame of mind stultifies itself if it does not take into account modern progress in the knowledge and techniques of medicine and in the program of preparation for practice. There is no field of medicine where these have been so completely justified by results as in surgery. It is a step backward to assume that the "general practice" of today is the same as the "general practice" of 50 years ago.

It is clear, as already stated, that much surgery must still be performed by poorly trained men. That is an attribute of an age of transition, and the fact that more and more is being performed by well trained men is the note of hope. One cannot criticize the present conditions of practice, but one can take positive issue with any pronouncement of an obsolete principle. The pressure of numbers rather than of ideals is at work when hospitals are obliged to open their operating rooms to poorly trained men and are forced to include in their training programs a "rotating internship" to fit men for "general practice," which both by implication and often by express statement includes the performance of operations. This is a denial of all the hard-won progress of the past 50 years.

In commenting on the rotating internship, one can criticize only its surgical implications. If it is properly designed and directed, it should produce a man who is able and proud to be a family doctor and not a man to whom the practice of medicine without surgery is unrewarding in either prestige or drama. Insofar as surgery is concerned, it should include enough contact with surgical problems to enrich the house officer's knowledge of surgical disease and surgical diagnosis, including particularly the indications for surgical treatment and a sound understanding of the principles of asepsis and infection. There are many family doctors today who find a satisfying life in practicing good general medicine without surgical procedures. The "general practitioner" who does his own surgery must ultimately disappear from the picture through pressure from two sides; namely, first, the availability of well trained surgeons and second, the prestige of the conscientious family doctor of the sort defined.

It behooves all who believe in surgical progress and in the greatest safety to the patient to give voice to the opinion that the family doctor is not a surgeon. It may be an unpopular act, and the bitterness of long ago may be reawakened in some quarters. But that is no reason for shirking the task. The present assumption that "general practice" must necessarily include surgical operations cannot be allowed to be accepted by default. Those who know the wrong of it should protest.

It is not unlikely that some persons, reading hurriedly, may misinterpret some parts of this letter. At the risk of repetition, therefore, I should like to make, in summary, the following categorical statements:

1. This discussion is not an attack on the family doctor or on the Academy of General Practice. The latter is doing admirable work in improving opportunities for acquiring knowledge by the family doctor and in raising his standards. The Academy is designed to improve service to the patient, just as is the surgical training program.
2. It is not an attack on the rotating internship when organized to produce well trained family doctors; however, it is critical of the rotating internship that assumes its graduates to be capable of performing general or special surgical procedures.
3. It is not an attack on the general practitioner who is now doing surgical work through force of circumstances. Many of these men are first rate surgeons, self-taught by long experience, who know their limitations. After all, efforts by men of their sort established the foundations of American surgery. This discussion is critical only of the assumption that this path to surgical proficiency is to be encouraged in these days.

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CHIROPRACTIC LEGISLATION

To THE EDITOR:—Recently several of my friends at the University of Minnesota Medical School have written me concerning a release dated April 5, 1951, which was issued by the Washington Office of the American Medical Association and entitled *Bulletin No. 13—82nd Congress.* This release contained an item about the bill S. 1235 which I introduced on March 30 for Senator Magnuson. I have already written to your Washington office about this release but wanted you to have this word of explanation also.

I want it quite clear that I am not sponsoring this legislation. This is a bill sponsored by and written by Senator Magnuson. It is a matter of common courtesy in the Senate that when one of our colleagues is out of the city on an extended visit bills will be introduced in his behalf by other Senators. Senator Magnuson is now in Japan. His office asked me to introduce several bills for him and several items to be printed in the Congressional Record. This I did as a courtesy. I did not examine the materials since they were not mine, nor did I question the purpose or the objective of Senator Magnuson in his proposed legislation.

My position on veterans' medical care is well known. I have not sponsored any legislation in behalf of chiropractic treatment even though I have been requested to do so on several occasions. The Senate Labor and Public Welfare Committee, of which I am a member, has on several occasions refused to include chiropractic treatment or education in its medical assistance bills. I am most anxious to work with the responsible medical leaders in improving our Veterans Administration medical program.

Sincerely yours,
HUBERT H. HUMPHREY,
U. S. Senator.

BIBLICAL ALLUSIONS TO CLOTTING

To the Editor:—The extraordinary increase in recent years of coronary thrombosis and other thromboembolic episodes together with the recent discovery that many important drugs employed in medical practice have the undesirable property of accelerating the clotting time of blood—a subject in which I have been a pioneer—aroused an interest in the history of blood coagulation and of clotting in general. I recently published in the *Journal of the American Pharmaceutical Association* (March 1951) a paper on Shakespeare's references to clotting and blood-clotting drugs which received a great deal of comment. I thought it worth while, therefore, to write a few remarks on the allusions to clotting in the Bible. While there are no references to clotting phenomena in the New Testament, in the Hebrew Bible, the Old Testament, there are three passages of scientific interest. In these passages, the Hebrew word *quapha,* meaning to clot or curdle or congeal, is employed. Each passage deals with a different form of biochemical reaction to which the term clotting can be applied.

The first passage is in the Book of Job, chapter 10, verse 10, and is the classical reference to the early stages of embryonic development.

> 10. Hast thou not poured me out as milk
> And curdled me like cheese?
>
> 11. Thou hast clothed me with skin and flesh,
> And knit me together with bones and sinews

The second passage alluding to clotting or congealing is found in Exodus, chapter 15, verse 8, and is the most interesting one from the standpoint of medicine.

> The deeps were congealed in the heart of the sea

Note here a most remarkable rhetorical feature. Here is a metaphor taken from the physiology and pathology of the blood and heart applied to the "congealing" of water in the "heart of the sea." Every physician familiar with the Scriptures will immediately be struck by the analogy of the expression to the phenomenon of coronary thrombosis in which there is also a "congealing" of a fluid—"blood"—in the "heart" of a human being. In other words, the rather common occurrence of coronary thrombosis is rhetorically employed to describe an extraordinary phenomenon of Nature, namely, the dividing or congealing of the Red Sea.

The third reference in which the word *quapha* is employed also figuratively is in the prophecy of Zephania, chapter 1, verse 12. Here clotting is referred to the "settling" of wine, as follows:

> And it shall come to pass at that time
> That I will search Jerusalem with lamps;
> And I will punish the men that are settled on their lees
> That say in their heart, the Lord will not do good,
> neither will He do evil.

The idea conveyed by the above is according to both Hebrew and Christian commentators the same and is perhaps best expressed by the note of J. M. P. Smith in the International Critical Commentary on Zephaniah (page 202), which reads as follows:

> "Who are thickening upon their lees." The metaphor is based upon the treatment of wine in the process of its ripening. Compare Jeremiah, chapter 48, verses 11 & 12. These men have been left undisturbed in their false security. Just as wine left too long in such a condition thickens and loses strength, so these men have sunk into weak self indulgence, having lost all interest and concern for the higher things of life, and being solicitous only for their own bodily comfort and slothful ease.

Perhaps further light is shed on the above simile by verse 17 of chapter 1:

> And their blood shall be poured out like dust.

On superficial reading, of this verse, the trope "poured out like dust" seems highly catachrestic. One does not pour or spill dust or earth. The usual Biblical expression for shedding or pouring blood employs a simile or metaphor derived from pouring water and not pouring dust. On deeper thought, however, we can perceive the figure as well taken. The phenomenon of blood clotting according to all physiological authorities, such as Howell, Macleod or Best and Taylor, consists in the deposition in the form of fine crystals of fibrin not unlike particles of dust mixed with red and white blood cells and many fragmented platelets. In the opinion of at least one Hebrew scholar, the expression "And their blood shall be poured out like unto dust" does not refer to spilling blood in slaughter, but rather to the shedding of the blood inside the body and causing death through thickening and congealing, i. e., clotting. Although the above comments may be somewhat far stretched, these references to clotting are no more exaggerated in their poetic imagery than references to clotting in Shakespeare.

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

EDICOLEGAL ABSTRACTS

hiropodists: Scope of Practice.—This was a mandamus action to compel the respondent, State Board of Medical Exami- ers, to cancel its order putting the petitioner on probation for ive years for engaging in conduct beyond the scope permitted by his license to practice chiropody. From a judgment in favor of the respondent, the petitioner appealed to the district court of appeal, second district, division 3, California.

The California Business and Professions Code provides: "The certificate to practice chiropody authorizes the holder to practice *chiropody*. As used in this chapter: Chiropody means the diag- osis, medical, surgical, mechanical, manipulative, and electri- al treatment of the human foot, including the nonsurgical treat- ent of the muscles and tendons of the leg governing the func- ions of the foot. No chiropodist shall do any amputation or use n anesthetic other than local."

The transcript of the proceedings shows that Mrs. Tuttle vis- ted the petitioner's office and complained to him of pains in her oes and the groin, stating that she was not "sick, except for my egs and feet." The petitioner examined her, asked her a number f questions concerning her general condition, pregnancy, and enstrual periods. At this time he took her blood pressure, gave er a treatment consisting of "stretching the leg," administered a hypodermic injection of adrenal cortex in the right hip, x-rayed her feet, and prescribed 50,000 Units of Vitamin A. When the patient returned to the petitioner's office two days later he prescribed for her a proprietary remedy known as calcidin, the essential ingredient of which is iodide, and gave her a diet to improve her "poor muscle tone."

The only question presented on this appeal, said the district court of appeals, is whether there is evidence to sustain the finding of the trial court that the conduct of the petitioner transgressed the limited certificate issued to him as a licensed chiropodist.

The petitioner's witness, Dr. Billig, testified that the Board of Medical Examiners requires chiropodists to take review courses given by a licensed medical doctor in order to qualify for renewal of their licenses and that he had been the petitioner's instructor in such a course. The witness stated that the proprietary, calcidin, was routine procedure which he had used successfully in the treatment of cold feet and that he had so instructed the students taking courses from him; that during the course he had made reference to a substance known as adrenal cortex to be used to counteract an imperfect contraction of muscle fibre; that he believed the use of both calcidin and adrenal cortex to be within the purview of the Chiropodist Act and permissible for use by chiropodists in correcting poor muscle tone in the legs and feet. The petitioner testified that Mrs. Tuttle had come to him complaining of pains in her toes and in the groin; that he had been taught to prescribe calcidin as treatment for cold feet; that he had been taught to administer hypodermic injections of adrenal cortex to improve the poor muscle tone of the feet and legs; that he prescribed Vitamin A for treatment of the feet; that he advised a high protein diet in that such a diet had "value in all weaknesses." The testimony of the petitioner and Dr. Billig, said the court, was sufficient, if accepted as sound professional opinion, to prove that the petitioner's treatment of the patient was not in violation of the section of the Business and Professions Code quoted previously.

There was no testimony to the contrary in the hearing before the Board or upon the trial, said the District Court of Appeal. This was a question in the field of medicine beyond the scope of common knowledge. It called for expert testimony. It was improper for the Board to decide the questions involved upon the basis of the opinions held by the several members of the Board. Neither the board nor the court could render a just decision except in reliance upon expert testimony. The Board members apparently relied upon their own opinions as evidence. They were not witnesses, said the court, and the worth of their opinions could not be tested by cross examination. They were to decide factual issues and not merely to exercise discretion and judgment. Their decision was subject to review by the courts in which the evidence relied upon to support their determination would be subject to examination. Unstated and unsworn opinions of the Board members would not be before the court. They could not be considered for any purpose. The District Court of Appeal therefore concluded that there was no proof that the petitioner had violated the Business and Professions Code. Accordingly the judgment in favor of the respondent was reversed and the Board was directed to issue a writ annulling its order which placed the petitioner on probation for five years.—*Brennan v. State Board of Medical Examiners, 225 P. (2d) 11 California (1950).*

MEDICAL MOTION PICTURES

Epidemiology of Influenza: 16 mm., black and white, sound, showing time 11 minutes. Produced in 1950 by and procurable on loan from Communicable Disease Center, 50 Seventh Street, N.E., Atlanta 5 or on purchase ($16.76) from United World Films, Inc., 1445 Park Avenue, New York 29.

The generation which grew up since 1918 lacks the respect for influenza which those who lived through the terrible epidemic have. There are always sporadic cases of the disease and small epidemics here and there, but in general, one has come to think of influenza as a more severe form of a cold.

How this disease has become established as a distinct nosologic entity is well shown in this film. The story is illustrated with a case report of a patient against the background of historical development; interspersed with excerpts from a lecture by Dr. Andrews, the noted British investigator; flashes of global distribution of centers where the disease is studied; and a brief sketch of diagnostic tests. The epidemiology of the three specific viruses and the constant search for mutants are told in a fascinating manner which holds the spectator's interest from the beginning to the last scene. The film can be described as being of general educational value and is recommended for physicians, medical students and nurses. The photography and narration are good. However, some viewers may feel that the ocean scenes are overdone.

Intravenous Anesthesia and Tracheal Intubation: 16 mm., color, sound, showing time 45 minutes. Prepared by Glenn Potter, M.D., California Hospital, Los Angeles. Produced in 1950 by and procurable on rental or purchase from Billy Burke Productions, 7416 Beverly Boulevard, Hollywood 36, Calif.

This motion picture presents the author's technics for the intravenous use of barbiturates, with emphasis on thiopental sodium and touching on thiamylal (surital®) sodium. The addition of various forms of curare is discussed. Endotracheal intubation is demonstrated, including excellent views through the laryngoscope. The author's numerous mechanical devices are demonstrated, including a new laryngoscope with fenestrated blade to permit rotation of the epiglottis in difficult cases; a combined unit containing watch and sphygmomanometer dial; special bottle holder, arm board and connectors for the intravenous administration of barbiturates; airway fittings, and a new nonrebreathing valve. Application of the principles discussed is well demonstrated for brain, tongue, and nose and throat surgery. Contraindications are adequately presented. The anesthesiologist's numerous duties and responsibilities are ably reviewed; however, the practice of manipulation of operating room lights during administration of inhalation anesthesia is subject to criticism.

This presentation is well organized, clear and concise and is recommended for anesthesiologists. The photography and narration are excellent.

MEDICAL LITERATURE ABSTRACTS

AMERICAN

American Journal of Hygiene, Baltimore

53:1-120 (Jan.) 1951

Phagocytic Activity Against Plasmodium Lophurae of Macrophages from Ducks of Varying Degrees of Natural Resistance to this Parasite. S. Ben-Harel.—p. 1.
Effect of Polonium ^{210} and Selenium ^{75} in Experimental Schistosoma Mansoni Infection in Mice. N. P. Watts and K. P. McConnel.—p. 11.
Growth of Hemoflagellates in Dialyzing Sacs and Production of Growth Inhibitory Factor. H. Seneca and E. Henderson.—p. 17.
Brill's Disease: II. Etiology. E. S. Murray and J. C. Snyder.—p. 22.
Epidemiological Aspects of Histoplasmin, Tuberculin and Coccidioidin Sensitivity. C. G. Loosli, W. G. Beadenkopf, F. A. Rice and L. J. Savage.—p. 33.
Serum Alkaline Phosphatase in Monkeys and Man During Poliomyelitis. J. D. Ainslie, P. K. Stumpf and T. Francis Jr.—p. 58.
Lethal Effect of Triethylene Glycol Vapor on Dried Air-Borne Bacteria. O. H. Robertson and W. Lester Jr.—p. 69.
*Industrial Anthrax in the United States: Epidemiologic Study. A. H. Wolff and H. Heimann.—p. 80.
Studies on Resistance of Coxiella Burneti to Physical and Chemical Agents. S. E. Ransom and R. J. Huebner.—p. 110.

Industrial Anthrax.—The recent increase of human anthrax in certain industries, particularly those processing imported animal hair and wool, prompted the Division of Industrial Hygiene of the United States Public Health Service to study the situation. Evidence is presented that indicates that carpet wool, in contradistinction to apparel wool, is the agent chiefly responsible for industrial anthrax, and it is also shown that these wools are especially infective. Human anthrax attributable to the handling of animal hair is shown to be due essentially to goat hair. Human anthrax in the leather industry is shown to be due essentially to goatskins, particularly those originating in certain parts of Asia. The authors list hygienic measures that should be enforced in industries that process and handle imported hides, skins, hair and wools. All dust, dirt and sweepings should be incinerated. Blending should be conducted after scouring, whenever compatible with the manufacturing process. Drying of wool should be conducted at the maximum temperature compatible with the process. Finished products and dyed wool and yarn should be handled and stored in such a manner that there is no danger of cross contamination from raw materials. Protective clothing should be worn by employees in all occupations where an anthrax risk exists. Employees must be informed of the cause, nature and control of anthrax.

American Journal of Public Health, New York

41:139-262 (Feb.) 1951. **Partial Index**

Professional Services Under Medical Care Insurance. G. Baehr.—p. 139.
Recent Developments in Use of Blue Cross and Blue Shield Plans. E. A. van Steenwyk.—p. 147.
Epidemiologist's Reflections on Some Laboratory Tests in Brucellosis. W. Dalrymple-Champneys.—p. 152.
Characteristics of Global Rat Populations. D. E. Davis.—p. 158.
Comparative Study of Methods of Isolating Mycobacterium Tuberculosis. D. Gifford, F. McKinley and C. A. Hunter.—p. 164.
Role of Laboratory in Prevention of Irreparable Injury in Neurosyphilis. C. Lange and A. H. Harris.—p. 168.
Significance of Conference on Aging for Public Health. C. Tibbitts.—p. 176.
Observations of Attitudes and Behavior in Child Health Center. Sample Studies of Maternal Feelings, Dependency, Resistant Behavior, and Inoculation Fears. D. M. Levy.—p. 182.
Is There Science of Personnel Selection?—Aptitude. J. M. Stalnaker.—p. 191.
Integration of Cancer Activities into Local Health Department Program. A. E. Heustis.—p 198.

American Journal of Surgery, New York

81:1-144 (Jan.) 1951

Barium Modification with Methocel. M. M. Marks.—p. 6.
Fluid and Electrolyte Therapy in Surgical Patients. R. E. Homans J —p. 10.
Results of Sigmoidoscopic Examinations at a Cancer Detection Ce Two-Year Study. H. W. Christianson and R. J. Tenner.—p. 1
*Routine Examination of Lower Bowel: Results in 500 Asym Patients. V. T. Young.—p. 18.
Complications of Anorectal Surgery. L. R. Pearson.—p. 25.
Control of Hemorrhage Following Anorectal Surgery. M. E. R —p. 28.
Two New Methods for Reducing Discomfort After Hemorrhoidect D. Hart.—p. 31.
Pre- and Postoperative Care in Anorectal Surgery. L. J. Johnson a F. W. Schilla.—p. 33.
Evaluation of Chloromycetin as Adjunct to Surgical Management Lymphogranuloma Venereum and Segmental Ulcerative Colitis. R. Rowe.—p. 42.
Irritable Colon. G. T. Harding.—p. 55.
Hydrogen Peroxide Proctitis. R. E. Pumphrey.—p. 50.
Use of Sliding Grafts in Treatment of Anal Fissures. H. K. Bel —p. 63.
Contracted Anal Canal. D. C. Ditmore.—p. 67.
Stricture of Rectum: New Treatment. R. Turell.—p. 71.
Sodium Pentothal® with Caudal Anesthesia in Anorectal Surgery. S. Jones.—p. 78.
Role of Chlorophyll in Proctology. B. Horwitz.—p. 81.
Relation of Ascorbic Acid Plasma Levels to Anorectal Conditions: Pr liminary Report. W. A. Scheffler.—p. 85.

Examination of the Lower Bowel in Absence of Symptoms.—Of 500 patients who had no complaints referable to the low bowel, 138 (27.6 per cent) were found to have lesions. Som of these had admitted no symptoms but on questioning confess that symptoms probably had been present. Some persons still denied symptoms after being confronted with evidence that the could not possibly be absent. Possibly, some of these had accepted conditions that would cause misery in others as bei normal attributes of human existence. Patients with sma hemorrhoids not likely to cause symptoms were not incl among those with lower bowel disease. Only large hemorrh that would produce symptoms were included. There were (patients with such hemorrhoids among the 138 with patholog lesions. Polyps were found in 44, diverticula in nine, fissures i eight, hypertrophic papillae in seven, pruritus ani in seven cancer of the bowel in five, fistula and rectal prolapse in fou each, melanosis coli in three, condyloma acuminatum in two nonspecific proctocolitis in two and various other lesions in on patient each. The five patients with cancer were all operable In no instance had the growth spread beyond the confines o the bowel, and in no case was metastasis to regional lymph nodes discovered. When the report was written all these patients were alive and showed no evidence of recurrence. These patients have a much more favorable prognosis than if the lesions had not been discovered until after the onset of symptoms.

American Journal of Tropical Medicine, Baltimore

31:1-146 (Jan.) 1951. **Partial Index**

Effect of Endochin on Experimental Toxoplasmosis. W. D. Gingrich and E. M. Darrow.—p. 12.
Sontoquine Naphthoate in Amebiasis. N. J. Conan Jr.—p. 18.
Aureomycin in Treatment of Yaws. E. H. Loughlin, A. Joseph and K. Schaeffer.—p. 20.
Effect of Orally Administered Aureomycin on Treponema Pertenue in Man. K. Schaeffer, E. H. Loughlin and A. Joseph.—p. 24.
Phase Contrast Microscopy for Demonstration of Treponema Pertenue in Yaws Lesions. E. H Loughlin, A. Joseph and K. Schaeffer.—p. 26.
Histoplasmin, Coccidioidin and Tuberculin Sensitivity in Honduras. V. Scott.—p. 27.
Salmonella Blegdam Infection: Report of Three New Cases. Ming-Yi Wu and J. Fournier.—p. 42.
Diagnosis of Schistosomiasis Japonica: IV. Studies on Schistosomiasis Japonica in Australian Air Force Unit. G. W. Hunter III, J. A. Dillahunt, E. C. Faust and others.—p. 50.
Relative Susceptibilities of Commonly-Used Laboratory Mammals to Infection by Schistosoma Mansoni. M. A. Stirewalt, R. E. Kuntz and A. S. Evans.—p. 57.
Hydatid Disease at Los Angeles County Hospital, 1936-1948; with Report of First Autochthonous Case from California. H. A. Tucker.—p. 63.
Hemoglobin Determination in Hookworm Disease Case-Finding. P. C. Beaver.—p. 90.

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of five days. Three journals may be borrowed at a time. Periodicals are available from 1940 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Review of Tuberculosis, New York

63:121-230 (Feb.) 1951

Fluctuation of Tuberculin Reaction in Different Geographic Areas and Its Relationship to Resistance. J. D. Aronson.—p. 121.
Importance of Tuberculin Test in Differential Diagnosis of Pulmonary Lesions. C. E. Woodruff and W. L. Howard.—p. 140.
Endothelioma (Mesothelioma) of Pleura: Review with Report of Seven Cases, Four of Which Were Extirpated Surgically. L. A. Hochberg.—p. 150.
*Bronchogenic Carcinoma as Differential Diagnostic Problem in Pulmonary Disease: I. Carcinoma Arising from Major Bronchi Uncomplicated by Secondary Infection. J. H. Moyer and A. J. Ackerman.—p. 176.
Hemoptysis in Chest Clinic Patients. A. D. Chaves.—p. 194.
Clinical, Functional, and Needle Biopsy Study of Liver in Pulmonary Tuberculosis. M. Seife, B. J. Kessler, J. Hoffman and J. R. Lisa.—p. 202.
Ribs from Thoracoplasty as Possible Source of Homogenous Bone Grafts. P. F. Hausmann.—p. 210.
Absorption of Sodium Salt of Para-Aminosalicylic Acid (PAS) from Rectum. C. W. Rieber, H. Kuschinskin and M. M. Friedman.—p. 213.

Bronchogenic Carcinoma.—Bronchogenic carcinoma constitutes a *difficult* differential diagnostic problem. Despite recent advances in chest surgery, the prognosis of this disease has not been improved significantly, owing in part to its protean manifestations and failure to recognize these early. Nine cases of carcinoma arising from major bronchi and uncomplicated by secondary infection in men between the ages of 39 and 63 are reported on. Attention is focused on correlation of pathological, clinical and roentgenologic manifestations observed during different phases of the pathogenetic development of these tumors and on diagnostic problems presented by them. The pulmonary manifestations of bronchogenic carcinoma are for the most part contingent on the site of the origin of these tumors and the complications resulting from progressive bronchial occlusion. The extrapulmonary manifestations are dependent in part on the pulmonary changes and in part on the pathogenicity of the tumor and its tendency to dissemination. The prognosis is more dependent on the latter, since the primary lesion may be restricted to the bronchial mucous membrane and be so small as to present no clinical or roentgenologic pulmonary manifestations even though the disease is widely disseminated. Thus, an easily resectable tumor is not necessarily an "early" carcinoma and vice versa. Cough is the commonest symptom of bronchogenic carcinoma. It frequently occurs very early, before bronchostenosis or mucosal erosion. Hemoptysis in the absence of complicating factors is seen only after erosion of the tumor mass has taken place. Localized or unilateral wheezing usually represents partial bronchial occlusion. This is frequently accompanied by roentgenographic evidence of localized emphysema distal to the obstruction. This observation may also be made in the absence of bronchostenosis. Atelectasis becomes manifest after the bronchial lumen has been completely occluded. Although this finding is not specific for carcinoma, it represents endobronchial disease in the majority of instances. In the presence of atelectasis, bronchography and laminagraphy, in addition to bronchoscopy, may be of great aid for determination of the specific etiology. The hilar type carcinoma with peribronchial radiation is not the most frequently observed bronchogenic carcinoma. Intraluminal growth with progressive bronchostenosis has been noted much more frequently by the authors. Although the hilar type is characteristic when it does occur, similar roentgenographic pictures may be seen in other diseases, such as sarcoidosis, Hodgkin's disease and unresolved pneumonia with resulting fibrosis.

Cincinnati Journal of Medicine

32:1-46 (Jan.) 1951

The Doctor and the National Emergency. P. I. Robinson.—p. 1.

32:47-82 (Feb.) 1951

*Translumbar Arteriography: Preliminary Report. A. T. Evans.—p. 47.

Translumbar Arteriography.—A preliminary report is presented on more than 150 aortic punctures performed under intravenous thiopental (pentothal®) sodium anesthesia for translumbar arteriography. The puncture needle entered the aorta just under the left anterior border of the twelfth thoracic vertebra. An x-ray film was exposed while the last cubic centimeter of the contrast medium was being injected in the aorta and after that a second x-ray film was exposed for visualization of the renal vessels. The procedure requires a certain amount of technical skill for consistently good arteriograms to be produced. No fatalities and insignificant morbidity were observed. Translumbar arteriography is applicable in the diagnosis and/or prognosis of vascular abnormalities of the abdominal aorta and its branches as well as the iliac arteries and their immediate branches. Arteriography, as applied to renal arteries, arterioles and the convoluted tubules, has met the criteria of a perfect diagnostic instrument in selected cases. It can be used to demonstrate aberrant vessels to the normally positioned kidney, to demonstrate anomalous vessels to ectopic kidneys, to indicate the presence of renal tissue when it is not demonstrable by pyelography, to demonstrate the amount of blood supply to a kidney and thus to estimate the kidney's potential function, to demonstrate renal cystic masses by their avascularity, to visualize increased vascularity and pooling of contrast medium within a neoplasm of a kidney and as an aid in differentiation of the Goldblatt type of hypertension from other types. Arteriography was found valuable in determination of the type of therapy to be instituted in selected urological cases. With arteriography, the placenta was demonstrated by its large irregular vascular pattern in a limited number of cases. This aided in differentiation of placenta previa from the normally positioned placenta. Arteriography enabled the author to distinguish definitely between an aneurysm of the splenic artery and that of the renal artery. The procedure proved of definite value in the study of all intraabdominal vascular abnormalities.

Circulation, New York

3:163-320 (Feb.) 1951

*Tromexan-3,3′-Carboxymethylenebis (4-Hydroxycoumarin) Ethyl Ester: Experimental and Clinical Properties. G. E. Burke and I. S. Wright.—p. 164.
Clinical Evaluation of Dicumarinyl Derivatives with Metabolic Study of Radioactively Labeled Anticoagulants in Animals. E. P. Hausner, C. L. Shafer, M. Corson and others.—p. 171.
Spatial Vector Electrocardiography: Clinical Characteristics of S-T and T Vectors. R. P. Grant, E. H. Estes Jr. and J. T. Doyle.—p. 182.
Catheterization of Left Ventricle in Man: Study of Right Bundle Branch Block by Simultaneous Intracardiac Electrocardiography of Both Ventricles. M. F. Steinberg, A. Seligmann, I. G. Kroop and A. Grishman.—p. 198.
Situs Inversus of Abdominal Viscera with Levocardia: Report of Eight Cases Submitted to Blalock-Taussig Operation. M. D. Young and H. E. Griswold.—p. 202.
*Cortisone Therapy in Acute Rheumatic Carditis: Preliminary Observations. T. N. Harris, W. B. Abrams, T. F. P. Leo and J. P. Hubbard.—p. 215.
Effect of Ascending an Ordinary Flight of Stairs on Work of Heart: Observations on Normal Individuals and on Patients with Coronary Heart Disease. J. A. L. Mathers, H. I. Griffeath, R. L. Levy and J. L. Nickerson.—p. 224.
Pathology of Pulmonary Vascular Tree: II. Occurrence in Mitral Insufficiency of Occlusive Pulmonary Vascular Lesions. D. L. Becker, H. B. Burchell and J. E. Edwards.—p. 230.
Controlled Myocardial Injury Produced by Hypothermal Method. C. B. Taylor, C. B. Davis Jr., G. F. Vawter and G. M. Hass.—p. 239.
Effect of "Sympatholytic" Drugs on Cardiovascular Responses to Epinephrine and Norepinephrine in Man. E. D. Freis, J. C. MacKay and W. F. Oliver.—p. 254.
Effects of Bleeding on Electrolyte Excretion and on Glomerular Filtration. T. A. Lombardo, S. Eisenberg, B. B. Oliver and others.—p. 260.
Adhesiveness of Blood Platelets in Arteriosclerosis Obliterans, Thromboangiitis Obliterans, Acute Thrombophlebitis, Chronic Venous Insufficiency and Arteriosclerotic Heart Disease. M. E. Eisen, M. C. Tyson, S. Michael and F. Baumann.—p. 271.
Effect of Salt Loading and Salt Depletion on Renal Function and Electrolyte Excretion in Man. W. S. Wiggins, C. H. Manry, R. H. Lyons and R. F. Pitts.—p. 275.
Visualization of Coronary Arteries During Life. J. A. Helmsworth, J. McGuire, B. Felson and R. C. Scott.—p. 282.
Occupational Analysis of 580 Cardiac Clinic Patients. H. Bennett, A. Brittis, L. Bronstein and others.—p. 289.
Renal Factor in Congestive Heart Failure. E. A. Stead Jr.—p. 294.

Tromexan.—Experiments on rabbits, mice and rats that were fed the coumarin derivative 3,3′-carboxymethylene bis (4-hydroxycoumarin) ethyl ester (tromexan) showed that tromexan prolonged the prothrombin time significantly when administered in therapeutic doses. For clinical evaluation of tromexan, 112 patients with thromboembolic diseases were treated. Tromexan has approximately one-fifth the potency of bishydroxycoumarin (dicumarol®), when compared milligram per kilogram in terms of effect on the prothrombin time obtained. Tromexan has a faster absorption and utilization rate than bishydroxycoumarin as measured by the level of hypoprothrombinemia produced within 18 to 24 hours after the initial dose. Arbitrarily selected initial doses of 1,200, 1,500 or 1,800 mg. were given. The duration of the anticoagulant effect is about one-half to one-fourth that of bishydroxycoumarin. Prothrombin times returned to normal 48 to 60 hours after a single initial dose. Satisfactory maintenance of a therapeutic level of hypoprothrombinemia was achieved by single daily doses of 600 to 900 mg., but 15 to 20 per cent of the patients required divided doses of 300 mg. three times a day or 600 mg. twice a day to keep the prothrombin time within therapeutic levels. In general, an interval greater than 24 hours should not elapse between doses of the drug, if an effective level is to be consistently maintained. Three patients with preexisting renal disease showed evidence of microscopic hematuria. Tromexan appears to be less prone to produce hemorrhagic complications. Further alteration of liver function and the albumin-globulin ratio was noted in one patient with liver disease.

Cortisone in Acute Rheumatic Carditis.—Four patients between the ages of 4 and 22 with definite rheumatic carditis of moderate or severe degree were treated with cortisone. The dosage used was 112.5 mg. for the three older patients, who all weighed approximately 90 pounds (40.8 Kg.), and 75 mg. for the patient aged 4. For the first five to 15 days after the institution of the treatment with cortisone there was no objective improvement or there was actual clinical evidence indicative of exacerbation or spread of the inflammatory process. Thereafter, there was rather rapid subsidence of the signs of inflammation, per se, so that the temperature, erythrocyte sedimentation rate and pulse rate had returned to approximately normal limits within three weeks of treatment, without a corresponding improvement in cardiac observations, other than some electrocardiographic changes. At this time cortisone was discontinued. Within a few days thereafter, each of the patients showed a sharp exacerbation of signs of rheumatic infection, and on resumption of treatment with cortisone these signs disappeared rapidly. Consequently, it was possible to reduce the dosage of the drug until it was withdrawn completely within two weeks. The general signs of inflammation thus seemed to respond fairly well to this treatment. The cardiac signs were worse in two of the patients and questionably so in a third patient at the conclusion of the treatment in comparison with the observations before treatment with cortisone was instituted. These results suggest the possibility of a dichotomy between the effects of cortisone on the cardiac changes and those on the signs of inflammation of the body as a whole. The possibility of a difference between the effects of cortisone in rheumatoid arthritis and in rheumatic fever is also suggested.

Industrial Medicine and Surgery, Chicago

20:49-98 (Feb.) 1951. Partial Index

*Environmental Lung Cancer. C. W. Hueper.—p. 49.
The Dermatologist Looks at Everyday Medical Care in Industry. E. A. Levin.—p. 63.
Early and Late Complications of Head Injuries. W. D. Abbott.—p. 79.
Critical Study of 50 Recurrent Hernias. B. C. Kilbourne.—p. 83.
Medicine and Industrial Accident Prevention. I. R. Tabershaw and W. Moorman.—p. 86.

Environmental Lung Cancer.—After commenting on the increase in lung cancer, the sex distribution and the histologic types, Hueper cites evidence for a correlation of lung cancer with occupation and with exposure to irritative chemical agents. The number of these environmental respiratory cancers is relatively small, however, when compared with the total number of cancers of the lung. Although all known environmental cancers have followed the inhalation of exogenous cancerigens present in the form of dust, fume, mist, fog, vapor or gas, consideration should be given to the possibility that some cancers of the respiratory tract may be due to agents entering the organism through the alimentary or cutaneous route and either being excreted through the respiratory organs or having special metabolic or chemical affinities to these tissues. The history of the discovery of environmental respiratory cancers has shown that the concentration of such tumors among members of restricted occupational groups usually led to their discovery. Industrial physicians and specialists in pulmonary diseases might make valuable contributions to the etiology and epidemiology of respiratory cancers by investigating thoroughly the occupational history of their patients with respiratory cancer.

Journal of Bacteriology, Baltimore

61:101-242 (Feb.) 1951. Partial Index

Studies on Chemotherapy of Vaccinia Virus: I. Experimental Design for Testing Antiviral Agents. K. A. Brownlee and D. Hamre.—p. 121.
Observations on Chemical Inhibition of Streptomyces Griseus Bacteriophage Multiplication. D. Perlman, A. F. Langlykke and H. D. Rebberg Jr.—p. 135.
Observations of Phage Output and on Anaerobic Lysis of Lysogenic Strains of Bacillus Megatherium. H. J. Welshimer.—p. 153.
Heterogenous Character of Streptomycin-Dependent Mutants of Mycobacterium. D. Yegian and V. Budd.—p. 161.
Characterization of Action of Lysozyme on Staphylococcus Aureus and on Micrococcus Lysodeikticus. R. A. Kern, M. J. Kingkade, S. F. Kerr and O. K. Behrens.—p. 171.
Electron Micrographic Counts of Bacteriophage Particles. S. E. Luria, R. C. Williams and R. C. Backus.—p. 179.
Inhibition of Yeast Carboxylase by Homologous Antiserum. V. Z. Pasternak, M. G. Sevag and R. E. Miller.—p. 189.
Observations on Strain of Neisseria Meningitidis in Presence of Glucose and Maltose: I. Growth Studies. C. Fitting and H. W. Scherp.—p. 203.
Observations on Problem of Brucella Blood Cultures. M. J. Pickett and E. L. Nelson.—p. 229.

Journal of Infectious Diseases, Chicago

88:1-104 (Jan.-Feb.) 1951. Partial Index

Immunological Relationship Between Viruses of Japanese B. Encephalitis and Japanese Equine Encephalomyelitis. K. F. Burns.—p. 1.
Erythrocyte Destruction in Tuberculous Animals Following Tuberculin Injection. C. Sandage, N. Brandt and J. M. Birkenland.—p. 9.
Observations on Pre-Erythrocytic Stages of Plasmodium Relictum, Plasmodium Cathemerium, and Plasmodium Gallinaceum in Various Birds C. G. Huff.—p. 17.
Course of Pneumococcal Infection in Mice During Treatment with Antibacterial Substances and *Adrenocortical* Extract. E. P. *Vollmer.*—p. 11.
St. Louis and Japanese Encephalitis in Hamsters Following Natural Feeding of Viruses. F. M. Schabel Jr.—p. 32.
In Vitro and Chemotherapeutic Studies with Chloramphenicol (Chloromycetin) Against *Hemophilus* Pertussis. R. W. Sarber and M. J. Hemans.—p. 50.
*Effect of Pituitary Adrenocorticotropic Hormone (ACTH) on Experimental Poliomyelitis and Equine Encephalomyelitis. A. Milzer.—p. 54.
Respiratory Metabolism of Extra-Embryonic Membranes of Chick Embryos in Relation to Multiplication of Agent of Feline Pneumonitis. J. W. Moulder and E. Weiss.—p. 68.
Inhibitory Action of Saliva on Diphtheria Bacillus: Hydrogen *Peroxide, Inhibitory Agent* Produced by Salivary Streptococci. R. Thompson and A. Johnson.—p. 81.
Adaptation of Avian Malaria Parasite Plasmodium Lophurae to Continuous Existence in Infant Mice. R. B. McGhee.—p. 86.
Resistance of Lungs to Streptococci as Affected by Ascorbic Acid Blood Level or Histamine Administration. W. J. Nungester, D. W. *Garrison,* P. G. Williams and others.—p. 98.

Effect of ACTH on Poliomyelitis and Encephalomyelitis.—A study was made of the effect of pituitary adrenocorticotropic hormone on mice inoculated with the Lansing strain of poliomyelitis virus. Similar experiments were also done with mice inoculated with western equine encephalomyelitis virus. The hormone was found to have neither prophylactic nor therapeutic effects.

Journal of Investigative Dermatology, Baltimore

16:1-70 (Jan.) 1951

Comparative Study of Use of Hydrophilic Absorption Ointment Bases. S. R. Perrin and A. Halpern.—p. 7.
Nature of Inclusion Body of Verruca Vulgaris: Histochemical Study of Nucleotids. H. Blank, M. Buerk and F. Weidman.—p. 19.
Acetylcholine "Blocking Effect" of "Antihistaminic" Drugs as Measured by Electrophoresis of Mecholyl in Human Subjects. D. J. *Perry,* J. A Hosmer and T. H. Sternberg.—p. 31.
Action of Collagenase on Skin and Anti-Collagenase Factor in Human Serum. R. B. Stoughton and A. L. Lorincz.—p. *43.*
Experimental Miliaria in Man: IV. *Sweat* Retention Vesicles Following Destruction of Terminal Sweat Duct. W. B. *Shelly.*—p. *53.*
Simultaneous Symmetrical Paired Comparison Method in Evaluating Results of Grenz Ray and of X-Ray *Therapy. S. L.* Hanfling and I. H. Distelheim.—p. 65.

Journal-Lancet, Minneapolis

71:43-82 (Feb.) 1951

Tracheotomy—One Solution for Pulmonary Problems in Critically Ill Patient. R. W. Dickman and I. D. Baronofsky.—p. 43.
Headache Related to Low Back Pain. R. J. Dittrich.—p. 47.
Genetics and Medical Practice. R. C. Anderson.—p. 49.
Management of Difficult Labors. W. B. Stromme.—p. 53.
Acrodynia Associated with Mercury Poisoning. P. M. Bancroft, R. S. Grant and F. H. Tanner.—p. 56.
Diagnosis and Treatment of Chronic Occlusive Disease of Peripheral Arteries. N. W. Barker.—p. 58.
Surgical Treatment of Convulsive Disorders. L. A. Titrud.—p. 63.
Veratrum Viride in Treatment of Essential Hypertension: Report of 40 Cases. F. B. Faust.—p. 65.
Dr. George E. Fahr—Great Physician and Teacher Par Excellence. O. H. Wangensteen.—p. 69.

Journal of Neurosurgery, Springfield, Ill.

8:1-134 (Jan.) 1951

Pathological Anatomy and Angiography of Intracranial Vascular Anomalies. O. Sugar.—p. 3.
*Dural Sinus Venography as Aid to Diagnosis in Intracranial Disease. B. S. Ray, H. S. Dunbar and C. T. Dotter.—p. 23.
Hemodynamic Effect of Unilateral Carotid Ligation on Cerebral Circulation of Man. H. A. Shenkin, F. Cabieses, G. van den Noordt and others.—p. 38.
Observations on Interrelationships of Intracranial Pressure and Cerebral Blood Flow. H. W. Ryder, F. F. Espey, F. V. Kristoff and J. P. Evans. —p. 46.
Surgical Experiences with Arteriovenous Anomalies of Brain. R. C. Bassett.—p. 59.
Specific Treatment of Intracranial Aneurysms: Experiences with 143 Surgically Treated Patients. J. L. Poppen.—p. 75.
Observations on Resection of Superior Longitudinal Sinus at and Posterior to Rolandic Venous Inflow. R. Jaeger.—p. 103.
*Complications of Angiography. R. Dunsmore, W. B. Scoville and B. B. Whitcomb.—p. 110.
Complications of Ligation of Internal Carotid Artery. H. C. Voris. —p. 119.

Dural Sinus Venography in Intracranial Disease.—This paper describes methods of investigation of the intracranial venous system, including (*a*) direct injection of contrast medium into the superior sagittal sinus through a catheter introduced into the sinus, (*b*) retrograde injection of contrast medium through a catheter introduced into the basilic vein of the arm and passed upward into the internal jugular vein to the superior bulb and (*c*) direct measurement of the venous pressure. The relative filling of the transverse sinuses by injection of the superior sagittal sinus in 12 normal subjects is recorded. The retrograde venogram with the catheter at the superior bulb of the internal jugular vein showed good filling with contrast medium of the superior and inferior petrosal sinuses and less often of the cavernous and transverse sinuses of the same side. There was also good filling of the vertebral, orbital and facial veins and the pterygoid plexus. It appears that normally there should be filling of at least the petrosal and cavernous sinuses and the vertebral and pterygoid plexuses of veins. The normal venous pressure in the superior longitudinal sinus was between 120 and 150 mm. of water. The authors describe nine cases in which abnormal patterns of the intracranial venous system were revealed following injection of contrast medium into the superior sagittal sinus. In two cases meningiomas and in one case a fibrosarcoma had invaded the sagittal sinus; in two cases neoplasms had invaded the transverse sinus. There was thrombosis of the sagittal sinus and of the transverse sinus in the sixth and seventh cases respectively. In the last two cases, there were abnormal patterns of the intracranial venous system following ligation or resection of one transverse sinus. Catheterization of the internal jugular vein may be done in a needlessly roundabout manner, but the method is feasible and involves less risk of damaging the jugular vein than direct injection. The catheter in the lumen of the sinus insures against accidental injection of iodopyracet solution (diodrast®) outside the sinus. The most important practical uses to which the described methods can be put at present are the demonstration of obstruction of the superior sagittal or transverse sinuses. In the case of neoplasms this simplifies decision of the extent of the operation. In the case of thrombosis a more accurate diagnosis and evaluation of the adequacy of the anastomotic veins is possible. Other advantages may become evident with wider use.

Complications of Angiography.—Attention is called to the potential hazards of cerebral angiography. The present study is based on a series of 147 carotid angiograms performed with 35 per cent iodopyracet solution (diodrast®) on 108 patients in the years 1946 to 1950. The series constitutes 30 cases of brain tumor, 17 of aneurysm, 19 of subarachnoid hemorrhage, 12 of cerebral thrombosis, 7 of degenerative disease, 4 of subdural hematoma and 19 undiagnosed cases. Complications occurred in 14 of the 108 cases. The authors feel that a far higher proportion of complications have occurred than is indicated in the literature when delayed complications are included. From 1940 to 1946, 22 angiograms performed by one of the authors and limited to cases of suspected aneurysm were not accompanied by complications. However, since World War II, when angiography was extended to include all cerebral diagnostic problems regardless of age or condition, there have been complications in nearly 10 per cent of the cases. Of 108 cases and 147 angiograms, there were 14 complications. These included three fatalities, four cases of hemiplegia with permanent residual deficits, two cases of transitory hemiplegia, two cases of convulsions, one case of carotid artery thrombosis, one case of injury to the cervical sympathetic chain and one case of iodopyracet solution skin sensitivity. The technical details of proficiency, quantity, methods and medication used in arteriography apparently are not important factors in the etiology of complications. The selection of cases is important, since the older age group, especially those having thrombotic tendencies or other evidence of impaired cerebral circulation, are most likely to have complications. The delayed nature of most of the serious complications of cerebral angiography suggests that cerebral thrombosis secondary to irritative vasospasm probably plays an important part in the etiology.

Journal of Urology, Baltimore

65:163-350 (Feb.) 1951

*Artificial Kidney: Preliminary Report. O. S. Lowsley and T. J. Kirwin. —p. 163.
Urological Survey of Anuria and Oliguria with Guide to Treatment. F. Farman, K. A. Lemon and H. L. Briskin.—p. 177.
Transthoracic Nephrectomy (Left) for Wilms' Tumor. V. J. O'Conor and J. R. Head.—p. 193.
Serum Albumin in Uremia: Clinical Investigation Correlated with Reversible Uremia in Dogs. R. Baker.—p. 197.
Retrocaval Ureter: Report of Four Cases and Review of Literature. J. E. Heslin and C. Mamonas.—p. 212.
Congenital Exstrophy of Urinary Bladder: Late Results of Treatment by Coffey-Mayo Method of Uretero-Intestinal Anastomosis. B. M. Harvard and G. J. Thompson.—p. 223.
Complete Cessation of Persistent Bladder Papillomatosis Following Nephro-Ureterectomy and Segmental Cystectomy for Primary Papillary Carcinoma of Ureter. W. W. Scott.—p. 235.
Absorption of Certain Constituents of Urine from Large Bowel of Experimental Animal (Dog). W. H. Boyce.—p. 241.
Early Correction of Congenital Chordee and Hypospadias. O. S. Culp. —p. 264.
Hypospadias: Concept of Treatment. H. B. Mays.—p. 279.
Allergic Granulomas of Prostate Gland. M. M. Melicow.—p. 288.
Leiomyoma of Prostate. J. J. Kaufman and R. R. Berneike.—p. 297.
Heating Effects of Short Wave Diathermy on Prostate of Dog. J. Hickman, J. F. Herrick, K. G. Wakim and C. F. Schlotthauer.—p. 311.
Experimental Study of Solvent Action of Versene on Urinary Calculi. B. S. Abeshouse and T. Weinberg.—p. 316.
Clinical Experience with Terramycin in Treatment of Refractory Urinary Tract Infections. R. M. Nesbit, J. Adcock, W. C. Baum and C. R. Owen.—p. 336.
SKF 538-A: New Topical Anesthetic for Use in Urethra: Preliminary Report. J. E. Dees and S. S. Ambrose Jr.—p. 346.

Artificial Kidney.—A new artificial kidney is described that is compact, mechanically efficient and satisfactory with regard to treatment of the failing kidney. This apparatus has several advantages over artificial kidneys previously described. It is relatively small and may easily be moved into the patient's room. Its parts may be satisfactorily sterilized by immersion in an antiseptic solution. The heparinized blood of the patient is removed from the venous system and moved through the dialyzer by an efficient mechanical pump at an appropriate and readily controlled rate of flow, and the volume of blood that is contained in the dialyzer at any one time is only 300 cc. The electrolyte solution is at all times maintained at a suitable temperature by a thermostat in the machine. It is not necessary to change the electrolyte solution, which may be used over and again during the period of dialysis. It is possible not only to remove electrolytes, such as sodium or potassium, but to add to these electrolytes in the blood, if one increases their concentration in the electrolyte solution. In vitro experiments with this apparatus demonstrated that low molecular weight nitrogenous products are effectively removed from aqueous solutions. Animals made uremic by nephrotoxic drugs were satisfactorily treated by use of the artificial kidney. A limited use of the apparatus on human patients has proven it to be an efficient substitute for the kidney for various lengths of time. The average blood urea nitrogen in all patients at the start of the dialysis was 130 mg. per 100 cc., and, after three hours of dialysis, was 99 mg. per 100 cc. Experience was not sufficiently great to indicate how long one may utilize the Lowsley-Kirwin artificial kidney effectively before the patient's kidneys will have to be relied on to do the work required. The authors consider it advisable to dialyze the patient for four or six hours and then to give him an equal period of rest before treatment is continued. If the patient is in coma, the use of the dialyzer may be continuous. The patients experienced no unpleasant postdialysis reactions. Immediate symptomatic relief was experienced in two cases.

J. Venereal Disease Information, Washington, D. C.

32:27-50 (Feb.) 1951

Syphilis Among Navaho Indians. C. S. McCammon, F. J. Dufner and F. W. Felsman.—p. 28.
*Results of Penicillin Therapy for Neurosyphilis at Bellevue Hospital. B. Dattner, E. W. Thomas and L. de Mello.—p. 33.
Penicillin Levels in Spinal Fluid After Intramuscular Injection of Procaine Penicillin. R. D. Wright, J. D. Thayer, F. P. Nicholson and R. C. Arnold.—p. 39.

Penicillin Therapy for Neurosyphilis.—Of 438 patients treated with penicillin alone for various types of active neurosyphilis and followed up by spinal fluid examinations for more than six months, the disease became inactive in 400 and remained inactive for periods varying from six to 75 months. Of the 38 therapeutic failures, 31 were retreated (25 were retreated only once, 3, twice and 3, three times). Of the retreated patients, 27 had normal spinal fluid findings when last examined; two have not yet been followed up for six months after retreatment. At various times, the authors have used the following drugs for the treatment of neurosyphilis: aqueous solutions of sodium penicillin, penicillin in oil and beeswax, and procaine penicillin in oil combined with aluminum monostearate. All these, in total doses of at least 6,000,000 units given over 15 to 19 days, have given good results. Because of its relatively few side effects and its excellent therapeutic effect, procaine penicillin in oil combined with aluminum monostearate is now preferred for the treatment of all types of neurosyphilis. The routine treatment with this product consists of 15 daily injections of 600,000 units each.

Medical Annals of District of Columbia, Washington

20:1-58 (Jan.) 1951

Place of Medical College in National Economy. D. F. Smiley.—p. 1.
Simple Method of Measuring Q-T Ratio. J. E. Smith.—p. 6.
*Recent Advances in Surgical Treatment of Peripheral Vascular Disease. G. de Takats.—p. 9.
Fundamentals of Tumors. V. J. Dardin.—p. 14.
Problem of Alcoholic. R. F. Gayle Jr. and M. W. Foster Jr.—p. 24.

20:59-118 (Feb.) 1951

Clinical Impressions of New Intravenous Barbiturate Surital Sodium: Preliminary Report. W. A. Spencer and C. S. Coakley.—p. 59.
Some Experiences with Chlortrimeton in Treatment of Duodenal Ulcer. N. H. Isaacson, J. L. Kelley Jr. and B. Blades.—p. 63.
Carcinoma of Pancreas. P. C. Kiernan.—p. 71.
Medical Management of Epilepsy. F. M. Forster.—p. 76.
Gonococcal Septicemia: Report of Case. H. L. Hirsh and W. Kurland.—p. 81.
Function of Appendix: A Theory. P. A. Caulfield.—p. 83.

Surgical Treatment of Peripheral Vascular Disease.—In his discussion of acute arterial embolism the author's chief concern is the early recognition and treatment of a single arterial embolus. One of the misconceptions about arterial embolism seems to be that a massive embolus breaks off from the left auricle or ventricle and occludes a major arterial bifurcation, with the classic symptoms of numbness, pallor, motor paralysis and pain resulting. Observations on patients with chronic fibrillation reveal that small showers of emboli with their warning symptoms often precede a major embolus. When a patient who has had fibrillation or who has had a coronary occlusion experiences numbness or tingling in his extremities, it should be remembered that these symptoms may be the forerunners of massive embolization, and heparin therapy should be maintained for at least two weeks. A second type of arterial embolus again does not occlude a major pathway but creates such a reflex vasoconstriction that the femoral or brachial pulses may disappear. Heating, paravertebral blocks and intra-arterial injections of papaverine, procaine hydrochloride or heparin may restore the pulse, warm the extremity and restore the motor power. If these measures fail to improve the circulation, embolectomy should be considered. Embolectomy can be done too early or unnecessarily but is usually done too late. The physician who sees the patient in the home should start treatment by injecting 50 mg. of heparin intravenously. This injection can be repeated ev 3 hours. Immediate hospitalization and embolectomy is visable. Another peripheral vascular disease discussed is thro boangiitis obliterans. The first principle of treatment here is to attack the disease surgically in its acute stage but to tre conservatively until a quiescent period is reached. Symp tomy may be useful, but a paravertebral sympathetic b should be tried first. Arteriosclerosis with and without diab responds surprisingly well to sympathectomy. Prophylactic sy pathectomy of the remaining extremity is advisable. The p ciples of amputation for peripheral vascular disease described.

New England Journal of Medicine, Boston

244:199-238 (Feb. 8) 1951

*Lumbar Sympathectomy for Arteriosclerosis of Lower Extremities. E Edwards and C. Crane.—p. 199.
Problem of Medical Laboratory Technologist. R. A. MacCready.—p.
Educational Requirements of the Medical Technologist. P. M. Rich son.—p. 204.
Training of the Medical Technologist. E. Judd.—p. 206.
Problems in Maintenance of Adequate Laboratory Staffs. D. A. Nicl son.—p. 207.
Effect of Cortisone in Sarcoidosis. M. Sones, H. L. Israel, M. B. Drat and J. H. Frank.—p. 209.
Progress in Medical Care of the Veteran. F. B. Carroll.—p. 213.
Medicine as Social Instrument: Tropical Medicine. W. A. Smyt —p. 217.

Sympathectomy for Arteriosclerosis.—Medical therapy hav been disappointing in arteriosclerosis of the lower extremiti an increasing number of patients have been subjected to lumb sympathectomy. The authors report on 100 patients who ha been subjected to this operation. Twenty-seven were diabet Following the operation there were two hospital deaths and early thigh amputations. Ninety-two patients left the hospi improved. The patients were followed for varying periods to three years and a few for nine years. Nine more patients di during the follow-up period. The 89 patients now living ha done well. The affected foot has been almost invariably bett after unilateral operation than the one not operated on. The has been only one further amputation. Patients with necro down to the bone proximal to the toes had such poor resul that this finding may constitute a contraindication to the oper tion. A moderately unfavorable influence was exerted by the presence of diabetes and a lesser influence by other visceral dis ease and perhaps also by severe hypertension. The previo loss of the contralateral limb was an unfavorable factor Although a good temperature response to paravertebral or spin anesthesia predicts a good result from operation, failure to r spond to the test bears little or no relation to the outcome. Th authors feel that the operation should be more widely employe because its general effect on the patient and on the limb very satisfactory.

Pennsylvania Medical Journal, Harrisburg

54:1-96 (Jan.) 1951

Headache Mechanisms and Their Relation to Diagnosis and Manageme G. A. Wolf Jr.—p. 25.
Review of Therapeutic Application of Antihistaminics. G. E. Farrar —p. 31.
Medical Treatment of Cataract. A. E. Town and A. E. Rakoff.—p. 35.
Relationship of Pathologist to General Practitioner. T. W. McCreas —p. 39.
Present Concepts of Early Treatment of Burns of Hand. P. C. Iversc —p. 41.

Philippine Medical Association Journal, Manila

26:491-536 (Nov.) 1950. Partial Index

Summary of Experiences with Adrenocorticotropic Hormone (ACTH) on Collagen and Allergic Diseases. F. C. Bocobo.—p. 499.
Perennial Rhinitis. E. A. Cleve.—p. 503.
Complete Inversion of Uterus: Case Report. J. T. Mendoza, O. Y. Romero and I. F. Manuel.—p. 512.
Urology in General Practice. L. F. Torres Jr.—p. 514.

26:537-594 (Dec.) 1950. Partial Index

Schistosomiasis Japonica in American Soldiers in Philippines: Clinical and Laboratory Study of 297 Treated Cases. O. W. Burtner.—p. 537.
Tubed Iris Tongue Modification of Iridencleisis. J. Tamesis.—p. 555.
*Hookworm Anemia in Filipino Children. E. Stransky and D. F. Dauis-Lawas.—p. 561.
Skin Lesions Benefited by Vitamin A. J. G. Tolentino.—p. 564.

Hookworm Anemia in Filipino Children.—Three stages of blood changes have been distinguished in hookworm disease. The first stage, of "compensated anemia," is characterized by increased erythropoietic activity of the bone marrow, which is sufficient to maintain the equilibrium between blood formation and destruction; the second stage is characterized by anemia, microcytosis and hypochromia and further increase in the erythropoiesis, and the third stage by symptoms of aplastic anemia and a general wasting of the bone marrow. Only two of the 15 patients were females; this, like other reports, shows the higher incidence in males. Fourteen of the 15 patients were in the second stage of anemia, and one was in the third. Evidence is presented that hookworm anemia is due to (1) loss of blood because of the blood-sucking worms and (2) increased demand for iron and proteins for maintenance of a normal hemoglobin and serum protein level. Besides iron and protein deficiency, multiple vitamin deficiency and secondary infections may be regarded as additional factors. Anthelmintic and iron therapy are the accepted treatments, but treatment by anthelmintics alone has been largely ineffective. Large doses of iron had to be given for three or four weeks before any improvement could be observed in the cases here reviewed. Other observers have found that the combined administration of iron and anthelmintics was no more effective than iron therapy alone.

Proc. Staff Meet. Mayo Clinic, Rochester, Minn.

26:49-64 (Jan. 31) 1951

*Effect of Terramycin on Intestinal Bacterial Flora of Patients Being Prepared for Intestinal Surgery. W. H. Dearing and G. M. Needham. —p. 49.
Viomycin in Tuberculosis of Guinea Pigs Due to Streptomycin-Sensitive and to Streptomycin-Resistant Tubercle Bacilli. A. G. Karlson and J. H. Gainer.—p. 53.
Struma Ovarii Causing Ascites and Hydrothorax (Meigs's Syndrome). R. H. Baskin Jr. and V. S. Counseller.—p. 60.

Effect of Terramycin on Intestinal Flora.—Hospitalized patients being prepared for surgical treatment of intestinal lesions were given a standard diet of minimal residue type, and a daily saline cathartic to make the stools soft or liquid. A series of enemas was administered one to two days before operation. Each patient received 750 mg. of terramycin orally, four times daily. A specimen of stool was sent to the bacteriologic laboratory each morning, promptly after it had been passed. In most cases all culturable micro-organisms, except Proteus and Pseudomonas organisms, yeasts and certain coagulase negative micrococci, were removed. Observations on 68 patients convinced the authors that terramycin is as effective as aureomycin as an antibacterial agent on the intestinal flora. They recommend that for preoperative intestinal antisepsis terramycin be given in doses of 750 mg. four times daily for three or three and one half days. However, as has been observed with aureomycin, the ability of terramycin to eliminate the susceptible bacteria from the intestinal tract may be impaired by the existence of intestinal obstruction, intestinal fistulas or perforations of the intestine with associated local abscesses.

Psychoanalytic Review, Albany, N. Y.

38:1-102 (Jan.) 1951. Partial Index

Catharsis in Group Psychotherapy. S. R. Slavson.—p. 39.
Psychological Mechanisms in Art Production. E. P. Mosse.—p. 66.
Case of Brief Psychotherapy by Sigmund Freud. R. Sterba.—p. 75.

Public Health Reports, Washington, D. C.

66:57-88 (Jan. 19) 1951

Statistical Studies of Heart Disease: VIII. Mortality from Heart Disease Among Negroes as Compared with White Persons. M. Y. Pennell and J. L. Lehman.—p. 57.

66:89-128 (Jan. 26) 1951

Medical Care for Public Assistance Recipients. W. P. Dearing.—p. 89.
Medical Services and Social Security Act Amendments of 1950. S. J. Mushkin.—p. 98.

66:129-162 (Feb. 2) 1951

Tuberculosis Control: Total Program. R. J. Anderson and E. T. Blomquist.—p. 132.
Community-Wide Chest X-Ray Survey: III. Social Work. S. Bloom. —p. 139.

66:163-190 (Feb. 9) 1951

Cooperation Between Health and Welfare Agencies—A Health Officer's View. L. A. Scheele.—p. 163.
Resume of Public Health Service Grant-in-Aid Programs Providing Medical Services. E. F. Warner and E. Flook.—p. 167.

66:191-222 (Feb. 16) 1951

Accuracy of Supplemental Medical Information on Birth Certificates. A. M. Lilienfeld, E. Parkhurst, R. Patton and E. R. Schlesinger. —p. 191.
Q Fever in Southern California: XII. Aureomycin Treatment of Dairy Cattle Naturally Infected with Coxiella Burnetii. L. Luoto, R. J. Huebner and H. G. Stoenner.—p. 199.
Survey of Brucellosis in Slaughtered Hogs. N. B. McCullough, C. W. Eisele and E. Pavelchek.—p. 205.
Plague in the Territory of Hawaii: I. Present Status of Plague Infection, Island of Hawaii. B. Gross and D. D. Bonnet.—p. 209.

Radiology, Syracuse, N. Y.

56:165-320 (Feb.) 1951

Patterns of Lobar Collapse as Observed Radiographically. M. Lubert and G. R. Krause.—p. 165.
Evaluation of Aortography in Abdominal Diagnosis. L. R. Sante.—p. 183.
Radiation Therapy of Carcinoma of Vagina. F. Buschke and S. T. Cantril.—p. 193.
Roentgen Appearance of Central Fat Tissue of Kidney: Its Significance in Urography. F. Windholz.—p. 202.
Simple One-Stage Method of Double-Contrast Study of Colon. R. D. Moreton, E. M. Cooper and E. F. Foegelle.—p. 214.
Study of Pneumoencephalograms Before and After Prefrontal Lobotomy (Freeman-Watts Technic). I. Meschan and J. B. Scruggs Jr.—p. 222.
Use of Photographic Films for Monitoring Stray X-Rays and Gamma Rays. R. B. Wilsey.—p. 229.
Roll-Film Apparatus for Rapid Serial Filming. W. H. Thompson, M. M. Figley and F. J. Hodges.—p. 242.
Irradiation of Bone Lesions in Presence of Metallic Intramedullary Fixation. L. F. Peltier and C. M. Nice Jr.—p. 248.
Case of Ileo-Ileal Intussusception of Unusual Etiology. H. H. Richardson.—p. 251.
Hemangioma of Bone. S. F. Oosthuizen and J. Barnetson.—p. 256.
Identification of Right and Left Sides in Roentgenograms by Permanent Cassette Marker. C. B. Holman and J. D. Camp.—p. 260.

Review of Gastroenterology, New York

18:79-158 (Feb.) 1951

Review of Some Unusual Forms of Perforation Complicating Benign Peptic Ulcer. M. Feldman.—p. 89.
Parenteral Fluids in Surgical Patient, with Special Reference to Pre- and Postoperative Care in Serious Gastrointestinal Lesions. H. M. Young and J. M. McGowan.—p. 96.
Primary Torsion of Omentum. J. A. Sterling and R. Goldsmith.—p. 106.
Acute Perforation of Gastric and Duodenal Ulcers: Report of 600 Cases. J. B. O'Donoghue, M. B. Jacobs and J. B. O'Donoghue Jr.—p. 113.
Effect of Antacid Preparations on Serum Aureomycin Levels. M. L. Williams and D. J. Weekes.—p. 128.
Intestinal Symptoms in Nongastrointestinal Lesions. B. J. Ficarra.—p. 131.
Esophageal Hiatus Hernia: Report of Case with Multiple Associated Abnormal Findings. E. W. Lipschutz.—p. 135.

Rhode Island Medical Journal, Providence

34:1-60 (Jan.) 1951

Diagnosis and Treatment of Heart Disease: Abstract of Six Lectures. F. Easton.—p. 17.
Pathology of Ionizing Radiation. R. M. Maynard.—p. 23.
Malignant Lymphoma of Gastro-Intestinal Tract. A. V. Migliaccio and V. M. Pahigian.—p. 26.
Role of Physician in Rhode Island Cash Sickness Program. T. H. Bride. —p. 59.

Surgery, Gynecology and Obstetrics, Chicago

92:129-256 (Feb.) 1951

- *Use of Smear of Urinary Sediment in Diagnosis and Management of Neoplasm of Kidney and Bladder. J. H. Harrison, T. W. Botsford and M. R. Tucker.—p. 129.
- Simple Pattern for Competent Hemorrhoidectomy. P. C. Blaisdell.—p. 140.
- Functional Restoration of Hypospadias Deformities: with Report of 60 Completed Cases. L. T. Byars.—p. 149.
- Early Surgical Treatment of Tuberculosis of Hip in Children. W. M. Roberts and F. S. Webster.—p. 155.
- *Adenomatous Polyps of Colon and Rectum. A. F. Castro, G. W. Ault and R. S. Smith.—p. 164.
- Carcinoma in Region of Papilla of Vater: Study of Cases in Which Resection was Performed. E. M. Miller, M. B. Dockerty, E. E. Wollaeger and J. M. Waugh.—p. 172.
- Tumors in Spinal Cord: Primary Extramedullary Gliomas. I. S. Cooper, W. M. Craig and J. W. Kernohan.—p. 183.
- Endogenous Allergy to Steroid Hormones: Nature of Certain Disorders Related to Ovarian Function. G. P. Heckel.—p. 191.
- Serum Antiproteases in Normal Pregnancy: Comparison with Changes Observed in Neoplastic Disease. P. M. West, J. Hilliard and A. C. Mietus.—p. 209.
- Observation on Absorption of Bacitracin: Blood Levels Following All Administration. A. B. Longacre and R. M. Waters.—p. 213.
- Effect of Penicillin on Bacteremia Accompanying Acute Diffuse Peritonitis. W. J. Williams, W. K. Runyeon, H. H. Zinsser and H. A. Zintel.—p. 217.
- Response of Distal Colon to External Stimuli: In Relation to Autonomic Nerve Section for Ulcerative Colitis. R. J. Schlitt, J. J. McNally and J. W. Hinton.—p. 223.
- Amniotic Fluid Embolism, Infrequent Cause of Maternal Death. H. W. May and F. D. Winter.—p. 231.
- Lymphoid Polyps (Benign Lymphoma) and Malignant Lymphoma of Rectum and Anus. E. B. Helwig and J. Hansen.—p. 233.

Smear of the Urinary Sediment in Diagnosis of Neoplasms.—Exfoliation of epithelial cells is characteristic of urinary tract epithelium, and desquamation increases when inflammation, calculus or neoplasm is present. By repeated examination of the urinary sediment neoplastic cells may be detected in the urine before symptoms occur and before it is possible to demonstrate neoplasm by either cystoscopic examination or roentgenographic methods. When such cells are found, cystoscopic examination should be repeated. If this is done, tumors that are detected can be treated earlier than would have been the case otherwise. Harrison and his associates present their experience with this method in 614 selected patients, all of whom had had urinary symptoms at some time. Well detailed smears of urinary sediment were obtained by the following technique: 30 cc. of freshly voided or catheterized urine is centrifuged for five minutes. The supernatant fluid is removed, and the sediment is covered at once with 5 cc. of 95 per cent alcohol. The sediment is spread evenly over a glass slide that has been previously thinly filmed with egg albumen. Partial drying is necessary for firmer attachment of the sediment to the slide. The smear is now fixed for a minimum of 10 minutes in a mixture of equal parts of ether and 95 per cent alcohol, and this is stained by the same procedure as is used for vaginal smears. Of the 614 patients, 82 had vesical or renal carcinoma. All the 67 patients with vesical carcinoma had demonstrable neoplastic cells in the urine. Three of 15 patients with renal cancer had "false negative" smears (no tumor cells in the urine). There were 15 "false positive" results in 532 patients who did not have demonstrable renal or vesical cancer. This method of study has been especially useful in follow-up of patients after conservative surgery for tumor of the bladder by leading to earlier discovery of recurrence.

Adenomatous Polyps of Colon and Rectum.—This report is based on a clinical study of 352 adenomatous polyps of the colon and rectum in 270 patients. The results of biopsy of the polyp showed that 49 patients had a total of 53 malignant adenomas. Although the incidence of adenomatous polyps was higher in males, the incidence of malignancy was higher in females. Follow-up with proctoscopic examinations was carried out for three years in benign lesions and for five years in malignant growths. Fifty-nine patients received no treatment, because they either refused it or did not return. In the other patients, coagulation, excision or segmental resection was done. The most important symptom in cases of adenomatous polyps is bleeding from the rectum. That these lesions may be discovered early, every opportunity for proctoscopic examination should be taken. The number of polyps discovered in routine studies of healthy persons is much greater than the number seen because of symptoms definitely attributable to them. Thorough examination of the colon and rectum (including a barium enema) is recommended in patients with adenomatous polyps. A more radical type of operation is recommended for malignant adenomatous lesions removed by the transabdominal approach. If local resection is done for malignant adenomatous polyps of the rectum, frequent follow-up examinations are imperative. Radical surgery should be resorted to if there is recurrence.

Wisconsin Medical Journal, Madison

50:125-224 (Feb.) 1951

- *Encapsulated Carcinoma of Breast. E. E. Eckstam, M. B. Dockerty and S. W. Harrington.—p. 146.
- Primary Repair of Facial Defects with Rotation Flaps. V. B. Hyslop and S. K. Wynn.—p. 153.
- Drug Eruptions Due to Antihistaminics. J. J. Barrock.—p. 156.
- Infectious Mononucleosis with Severe Meningoencephalitic Complication: Report of Case. L. McNeel.—p. 159.
- Analysis of 271 Consecutive Cases Seen by Psychologic Service Unit, Milwaukee. R. Headlee.—p. 161.
- Echinococcus Cyst of Liver: Report of Case. A. J. Jurishica.—p. 1[illegible]
- Self-Expression and Self-Discipline: Dualism in Education. K. E. Kasowitz.—p. 179.
- Epidemic Keratoconjunctivitis: Report of Three Cases. R. A. Moss.—p. 182.

Encapsulated Carcinoma of Breast.—The authors undertook the present study to determine the histologic types that compose the group of encapsulated carcinomas of the breast and to see whether prognosis and other characteristics were significantly different from those associated with carcinoma of the breast in general. Sixty cases of encapsulated, circumscribed or demarcated carcinoma of the breast were seen at the Mayo Clinic from 1910 to 1944. These comprised approximately 1 per cent of the cases of mammary cancer. A total of 56 lesions from 55 patients were analyzed. Most of the data agree with those for carcinoma of the breast in general. The main symptoms were a mass or pain of some sort. The skin was attached to about 40 per cent of the lesions, retraction of the nipple was associated in 12 per cent and axillary nodes were palpable in association with 25 per cent. On gross inspection of the specimen, about half the carcinomas were well encapsulated. Microscopically, none were completely encapsulated and there was some invasion of the capsule in all cases. An inflammatory reaction about the tumor was noted in more than a third of the cases. The lesions were grades 3 and 4 in 82.2 per cent of the cases. Chronic fibrous and chronic cystic mastitis were the most frequent associated pathologic conditions. Involvement of the axillary nodes was associated with only 21 per cent of the lesions. The over-all three and five year survival rates were 73.7 and 66.7 per cent, respectively. Only lymphatic spread could explain the metastatic lesions in the fatal cases, and hematogenous spread in addition had to be postulated to explain the lesions in half of the fatal cases.

Yale Journal of Biology and Medicine, New Haven

23:269-360 (Feb.) 1951. Partial Index

- Growth Curves of Influenza Virus Based on Hemagglutination Titers in Individual Embryonated Eggs. M. W. Freymann, I. Tamm and R. H. Green.—p. 169.
- Effect of Phospholipids on Inhibition of Growth and Respiration in Yeasts by Sodium Benzene Dodecyl Sulfonate. V. M. Cutler Jr. and K. S. Wilson.—p. 277.
- Care of Premature Infants on University Service, Grace-New Haven Community Hospital. R. E. Cooke and G. F. Powers.—p. 282.
- Preliminary Observations on Effect of Aureomycin, Terramycin, Tibione, Combined Tibione and Streptomycin, and Chloromycetin on Morphology of Liver in Man. R. Yesner and P. Kunkel.—p. 299.
- Collateral Respiration in Normal and Diseased Lung. G. E. Lindskog.—p. 311.
- Effects of Prolonged Alcohol Ingestion on Liver of Rat Under Conditions of Controlled Adequate Dietary Intake. G. Klatskin, H. M. Gewin and W. A. Krehl.—p. 317.
- Manifestations of Vitamin Deficiency During Aureomycin and Chloramphenicol Therapy of Endocarditis Due to Staphylococcus Aureus: Report of Case. H. M. Gewin and G. J. Friou.—p. 332.

FOREIGN

ta Medica Scandinavica, Stockholm

139:1-78 (Dec. 30) 1950

ronary Infarction and Gout. E. Ask-Upmark and L. Adner.—p. 1.
ethane Tolerance Tests in Leukemia Patients. B. E. Hallgren.—p. 7.
ncreatogenous Steatorrhoea. M. Seip.—p. 15.
ncer of Pancreas. Clinical and Pathological Study. L. Thamsen, N. Hjorth, A. R. Christensen and M. Bjørneboe.—p. 28.
agnosis of Infarct and Aneurysm of Posterior Wall in Electrocardiogram. L. Slapak and H. Partilla.—p. 42.
echanism of Gros Titration and Formogel Reaction. J. C. M. Verschure. —p. 51.
alindromic Rheumatism. K. Wassmann.—p. 55.
ole of Hypophysial-Hypothalamic System in Pathogenesis of Erythremia and Symptomatic Polycythemias. E. Haynal and F. Graf.—p. 61.

alindromic Rheumatism.—Wassmann reports on four patients ith the symptoms of palindromic rheumatism and briefly re- ews the literature on this disorder, giving particular attention the report published by Hench and Rosenberg in 1944. The m palindromic is derived from the Greek word for recurrent d denotes the most characteristic feature of the disorder. The ease is rare; Hench and Rosenberg estimate its frequency at out 5 in every 4,000 cases of all forms of rheumatic disorders joints and muscles. Solis-Cohen considered the disorder to be gioneurotic, and Kahlmeter regarded it as an allergic dis- er because of the simultaneous occurrence of other allergic nifestations. Palindromic rheumatism is characterized by ite attacks of swelling, redness and tenderness of a single it or several joints, accompanied by pain but usually without er. The intervals between the attacks are variable, whereas duration of the attacks in the individual patient is always ch the same, varying from a few hours to a few days in dif- ent patients. Gouty arthritis and intermittent hydarthrosis are disorders that must be considered in the differential diagnosis. ferentiation from gouty arthritis is not difficult, because a rise he uric acid content of the serum, tophi and roentgenologic nges are never found in palindromic rheumatism. Similarities the latter disease to intermittent hydarthrosis are more con- uous than the differences, and, moreover, there seem to be nsitional forms, for which reason Parkes Weber's suggestion t intermittent hydarthrosis be included under the term palin- mic rheumatism seems justified. Treatment of palindromic umatism usually fails, but the prognosis is favorable in that disease produces no chronic changes of the joints.

asil-Médico, Rio de Janeiro

64:291-302 (Dec. 2 and 9) 1950. **Partial Index**

pture of Ectopic Pregnancy: Report on 134 Cases. L. F. Cezar de Andrade.—p. 291.

pture of Ectopic Pregnancy.—During a period of 10 years zar de Andrade observed 134 cases of ruptured ectopic pregncy in a municipal emergency hospital. The diagnosis was de on the basis of the menstrual history and the typical symp- ns of rupture, which were present in most cases. It was con- ned in some cases by bimanual gynecologic examination of the de sac of Douglas or by puncture of the cul de sac. In these umstances the sac is very painful and tense, and pressure its sudden extreme local pain. All patients who were seen mptly after the rupture were subjected to immediate opera- n. The eight patients who were seen several hours or days after urrence of rupture or immediately after a second severe rup- e were considered in two different groups: (1) those who were good general condition and (2) those with acute anemia due hemorrhage. In the former the diagnosis was confirmed in usual manner, and an immediate operation was performed. those with acute anemia any diagnostic pelvic examination s interdicted. Preoperatively they were given whole blood nsfusions, intravenous fluids and analeptics. Transfusions re also indicated during and after the operation. In the cases orted by the author rupture of ectopic pregnancy occurred ring the first month of pregnancy in the majority of cases. e pregnancy was tubal in all cases but one, it which it was ovarian. The operation consisted in salpingectomy by Delbet's technique in all cases but one. Partial oophorectomy was performed in the case of ovarian rupture. The author emphasizes the importance of a careful closure of the abdominal wall, in three planes, in operations for rupture of ectopic pregnancy. Early ambulation of the patient is contraindicated. Postoperative treatment is also described.

British Journal of Dermatology, London

63:1-42 (Jan.) 1951. **Partial Index**

*Dermatitis Herpetiformis: Follow-Up and Survey of Treatment. G. A. G. Peterkin.—p. 1.
Unsealed Hanging-Drop Technique for Investigation of Microsporum in Hair. C. J. La Touche.—p. 8.
Treatment of Tinea Capitis Without Fungicides. R. W. Carslaw.—p. 16.
Heparin Tolerance Test in Lupus Erythematosus. P. Borrie.—p. 21.
Porokeratosis (Mibelli). H. Haber and A. Porter.—p. 28.

Dermatitis Herpetiformis.—Of 105 patients with dermatitis herpetiformis who were treated over a 24 year period, 42 were questioned concerning their progress. The age incidence revealed that in Edinburgh, at least, the disease is not rare in children, as 22 cases of the 105 occurred in patients under 5 years of age. Of the 42 patients followed up, 16 were clinically cured, in seven the disease was quiescent and in 19 was still active. In six of the 42 patients and possibly in one other the eruption began shortly after vaccination, while in one the dermatosis had been much severer since vaccination. That dermatitis herpetiformis occasionally starts just after vaccination has been observed for over 50 years. No evidence could be produced that the disease is due to a filtrable virus. Of 24 patients treated with arsenic, seven were cured and remained so for periods varying from one and one half to 16 years. No patient was cured by sulfapyridine, although six are able to control the disease over long periods with minimal dosage. Only one patient with the disease has been treated in Edinburgh with aureomycin, with no improvement whatsoever. Treatment with aureomycin raises the problem of the difficulty of differentiating dermatitis herpetiformis from pemphigus vulgaris. There is no single absolute point of difference. Often the clinical picture of dermatitis herpetiformis gradually changes into that of pemphigus vulgaris. The author used aureomycin in one patient who had pemphigus vulgaris; it had no beneficial effect, but it caused a general exfoliation of the skin lasting for about 10 days. Aureomycin had no effect either in two cases of pemphigus foliaceus or in a case of pemphigus vegetans.

British Journal of Ophthalmology, London

35:1-60 (Jan.) 1951

Unusual Retinal Detachment, Possibly Sex-Linked. A. Sorsby, M. Klein, J. H. Gann and G. Siggins.—p. 1.
Common Pathological Basis of Nervous Ocular Symptoms in Chronic Glaucoma: Preliminary Note. G. Cristini.—p. 11.
Measurement of Binocular Eye Movements of Subjects in Sitting Position. M. P. Lord.—p. 21.
*Choroideremia: Report of Three Cases in Three Generations. R. F. Lowe. —p. 31.
Degeneration and Regeneration of Corneal Nerves. B. Rexed and U. Rexed.—p. 38.
Aureomycin in Trachoma. M. A. Shah.—p. 50.

Choroideremia.—Choroideremia in the male is progressive; night-blindness in childhood is followed by progressive loss of sight and advancing field defects in youth and adult life and complete blindness in old age. Choroideremia is not due to congenital absence of the choroid with spared macular areas but is the result of an inherited form of progressive retinal degeneration resembling retinitis pigmentosa. A woman with this disease has a characteristic fundus picture but develops no defect in vision. Progression is slow and of a minor degree. Typical fundus changes in a female show her to be a transmitter, whereas any woman who does not have the stigmas of choroideremia in her fundi cannot pass it to her descendants. This form of hereditary transmission is called sex-linked conditional or provisional dominance. The defective gene is located in the X chromosome. Any person with even minor manifestations will transmit the disease according to the chances of sex-linked inheritance. An afflicted male may be told that neither his sons nor any of their descendants will suffer from the disease and that all his daugh-

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asterisk (*) before a title indicates that the article is abstracted. Single e reports and trials of new drugs are usually omitted.

ters will have good sight, although they will have signs of the disease in a mild form. The affected females will transmit the disease to half their sons, who will eventually become blind and to half their daughters, who will have no significant disability but will pass on the disease to their descendants in similar proportions. In this paper Lowe presents three cases of choroideremia. Two males from alternate generations showed the disease in its severe form, and the female in direct line in the intervening generation showed it in the benign form of the female transmitter.

British Medical Journal, London

1:263-316 (Feb. 10) 1951

*Role of Somatotrophic Hormone in Production of Malignant Nephrosclerosis, Periarteritis Nodosa, and Hypertensive Disease. H. Selye. —p. 263.
Method for Detecting Cortisone in Body Fluids. C. L. Cope.—p. 271.
Unusual Aurae in Two Cases of Epilepsy in Childhood. B. D. Wyke. —p. 272.
Sixth-Nerve Palsy After Lumbar Puncture and Spinal Analgesia. R. Bryce-Smith and R. R. Macintosh.—p. 275.
Torsion of Great Omentum. H. A. Hashemian.—p. 276.
Spontaneous Pneumothorax from Secondary Sarcoma of Lung. A. B. Shaw.—p. 278.
Haemolytic Transfusion Reaction Due to Anti-Lewis^a Agglutinin. S. I. de Vries and H. S. Smitskamp.—p. 280.

Somatotropic Hormone.—This paper discusses interrelations between the hypophysis, the adrenal cortex and the peripheral target organs in what Selye has termed the general adaptation syndrome. Experiments on female piebald rats revealed that the administration of electrophoretically pure somatotropic hormone, which has mineralocorticotropic effects, produces nephrosclerosis with variable degrees of nephritis, polyuria, myocarditis, periarteritis nodosa and hypertension. The experimental animals were sensitized to mineralocorticoid actions by unilateral nephrectomy and an excess sodium chloride intake, but this sensitization in itself did not produce such changes. These toxic manifestations parallel those found in animals receiving excesses of desoxycorticosterone acetate or lyophilized anterior pituitary material. It is assumed that somatotropic hormone is the active principle responsible for the toxic actions of lyophylized anterior pituitary material. The lesions caused by somatotropic hormone are considered to be due to a peripheral synergism between it and the desoxycorticosterone acetate-like mineralocorticoids. The cardiovascular and renal damage normally caused by somatotropic hormone overdosage is prevented if cortisone is simultaneously administered in doses large enough to produce adrenocortical atrophy. Somatotropic hormone also increases the sensitivity of the rat to the production of experimental arthritis. Simultaneous treatment with cortisone exerts a contrary effect. However, larger doses of cortisone are required to inhibit experimental arthritis in the somatotropic hormone-treated animal than in the one not receiving the latter hormone. Apparently the antiarthritic effect of cortisone is inversely proportional to the amount of somatotropic hormone present in the organism. In the production of the so-called diseases of adaptation somatotropic hormone appears to play a part as important as that of pituitary adrenocorticotropic hormone. The former is responsible for the activity of mineralocorticoids, which stimulate defensive granuloma formation, while the latter regulates the secretion of glucocorticoids, which inhibit such defence reactions.

Cardiologia, Basel

17:315-374 (No. 6) 1950

The Q_1 Wave in Left Heart Block. J. Laham, O. Gialloreto and J. Lenegre.—p. 315.
Digitalis Therapy in Chronic Cardiac Decompensation. H. Siedek and S. Tomek.—p. 334.
Alterations of the Intra-Auricular Potential. E. Coelho, J. M. da Fonseca and A. Nunes.—p. 346.
*Prognostic Value of Hypoxemia Test. G. Biörck and T. Dalhamn.—p. 366.

Prognostic Value of Hypoxemia Test.—The authors performed 243 hypoxemia tests between 1942 and 1946, and, after an average follow-up period of seven years, studied the incidence of deaths (cardiac or from other causes), in those whose reactions were positive, doubtful and negative. The mortality rate appeared to be much higher in men than in women, but since the average age of the women was lower at the time of the test, a longer observation time will be necessary before valid conclusions can be drawn. The incidence of cardiac deaths was higher, for both men and women, in patients reacting positively than in those reacting negatively, the figures being much higher for men than for women. It was not possible to determine whether doubtful results of the test have any pathologic significance, although the prognosis in these patients seems to be better than in those with definitely positive reactions. Negative or doubtful hypoxemia reactions were followed by cardiac death within six months in five patients and therefore do not exclude advanced myocardial disease. In the different clinical groups the greatest cardiac mortality rate (35 per cent) was noted in the group with hypertension. Clinical judgment as to the degree of coronary involvement in the hypertensive group was a better guide to prognosis than the hypoxemia test, which can only be regarded as a diagnostic aid. There are no grounds for believing that the results of the test, when conflicting with clinical evaluation, would be more valuable than the latter.

Glasgow Medical Journal

32:1-30 (Jan.) 1951

Intrapleural Pressures and Artificial Pneumothorax in Atelectatic Br chiectasis. A. W. Lees.—p. 1.
*Review of 100 Cases of Ringworm of Scalp. O. A. Finn.—p. 13.
Painful Shoulder Syndrome S. J. T. Robertson.—p. 16.

Ringworm of Scalp.—Each of the 100 cases of ringworm of t scalp reviewed here was diagnosed clinically and confirmed examination with Wood's light. In 77 cases the fungus was ide tified by cultures. Microscopy was carried out in the majority cases and particularly where Wood's light examination show no fluorescence, e. g., in the presence of Trichophyton s phureum, of T. quinckeanum and of T. schonleini infectio Microsporum audouini infection accounted for 83 per ce of the 77 cases identified by culture. Sixty patients received x-r epilation, and defluvium commenced 15 days after the irradi tion. Hair growth was present in 63 days. Local applications salicylanilide ointment and benzoic and salicylic acid (Whi field's) ointment were used in 30 cases. This method requir six months to produce cure as against three months with x-r epilation. The difference in the time factor between the two tre ments, the preponderance of Microsporum infection and the i terval of 15 days between the date of x-ray epilation therapy a commencement of defluvium all agree with generally accept views on the pathogenesis and therapy of tinea capitis.

Journal of Laryngology and Otology, London

65:1-52 (Jan.) 1951

Exfoliative Cytology as Aid in Diagnosis of Tumours of Throat, No and Ear. I. Friedmann.—p. 1.
Anatomical and Clinical Evaluation of Head Pain Attributed to Sphen Palatine Ganglion. R. B. Lewy.—p. 10.
Certain Observations on Anatomy, Histo-Pathology and Physiology External Auditory Meatus. E. G. Collins.—p. 14.
Chronic Exudative Otitis Externa. J. P. Stewart.—p. 24.
External Otitis. R. B. Lumsden.—p. 33.
Bullous Otitis Externa. J. V. Clark.—p. 38.

Klinische Wochenschrift, Heidelberg

29:33-64 (Jan. 15) 1951. **Partial Index**

Number and Significance of Degenerated Ganglion Cells in Sympa thectomized Sympathetic Nerve Ganglions. W. Engelbrecht.—p. 41.
*Mechanism of Action of Aureomycin and Chloromycetin in Rickettsia and Typhoid Diseases. F. O. Höring.—p. 49.
Contribution to Effect of Progesterone. G. K. Ober and M. Weber —p. 53.

Aureomycin and Chloramphenicol in *Rickettsial* and Typhoi Diseases.—Important conclusions about the mechanisms o chemotherapy and immunity to infectious diseases may be draw from clinical experiences with aureomycin and chloramphenico (chloromycetin®) in patients with cyclic infectious diseases. Th action of these new antibiotics starts with the bacteriostatic attack on the pathogenic agents. But this attack is only the firs link in a chain of events leading to clinical success, which apparently requires the active participation of the host. Many fact such as the favorable effect of chloramphenicol but not o aureomycin on typhoid diseases, the frequent defervescence by crisis, the lack of parallelism between the effect obtained and the dose employed have not yet been explained. It is suggested that the blood vessels of the host may participate actively in the mechanism of action of these antibiotics by providing for a higher concentration of the antibiotics at the areas of reaction. Generalization of the infection may be controlled by the bacteriostatic effect of the antibiotics, but this increases the risk of recurrences, because of insufficient immunization. The earlier antibiotic treatment of rickettsial and typhoid diseases is instituted, the longer it must be continued for prevention of recurrences. Healing of tertiary inflammatory local processes, despite the continuation of the infection, may be obtained with the antibiotics, and these processes may be prevented when treatment is instituted early enough. This shows the relation of clinical effect of the treatment to the time treatment is instituted. By the use of these drugs, it may eventually become possible to immunize patients under antibiotic protection so that they pass through the disease without clinical manifestations.

Lancet, London

1:245-298 (Feb. 3) 1951

Results of Surgery in Sciatica and Low Back Pain. B. H. Burns and R. H. Young.—p. 245.
Activity of Human Cervix and Corpus Uteri: Their Response to Drugs in Early Pregnancy. H. O. Schild, R. J. Fitzpatrick and W. C. W. Nixon.—p. 250.
*Streptomycin Treatment of Tuberculous Lesions of Trachea and Bronchi: Report to the Medical Research Council by Streptomycin in Tuberculosis Trials Committee. G. Marshall, J. W. S. Blacklock, C. Cameron, and others.—p. 253.
Conservative Surgery of Duodenal Ulcer. E. MacLellan.—p. 257.
*Arterial Perfusion of Liver in Shock: Experimental Study. E. J. Delorme.—p. 259.
Management of Burns. R. H. Cram.—p. 263.
Value of Leucocyte-Counts in Thiouracil Medication. T. D. S. Holliday.—p. 265.
Rôle of Sulphonamides and Penicillin in Pathogenesis of Systemic Lupus Erythematosus. S. Gold.—p. 268.
Atypical Case of Phenylketonuria. V. A. Cowie.—p. 272.

Streptomycin Treatment of Tuberculous Lesions of Trachea and Bronchi.—Tracheobronchial disease is not a condition separate from pulmonary tuberculosis. A pulmonary focus commonly coexists and is probably the site from which the tracheobronchial tuberculosis originates. Sometimes the tracheobronchial disease becomes the major lesion; it may remain as the only active focus when the lung lesion has healed, or it may, by virtue of its position, decisively influence the course of the disease or the success of treatment. This paper presents the results obtained with streptomycin therapy in 35 patients with tracheobronchitis. Streptomycin was given intramuscularly every six hours for four months. The first 21 patients were given 2 Gm. of streptomycin daily; the last 14, whose treatment was begun after March 1948, were given only 1 Gm. daily. There was only slight evidence that the lower dose was less satisfactory. Bronchoscopy was done before, during and after treatment. In 24 (68 per cent) of the 35 patients the bronchial lesion was found to be greatly improved or healed when the final bronchoscopy was done four or six months after the start of treatment. In 15 of 33 patients who underwent bronchoscopy two months after starting treatment, there was much improvement in the appearance of the bronchial lesions; later relapse was noted in only one of these cases. A satisfactory later response of the bronchial lesion was unusual if some improvement was not found two months after treatment began. Healing of the bronchial lesion was more frequent in those with limited lung disease than in those with tuberculous cavities. Bronchial stenosis was present before treatment in 15 patients, and in seven more cases it developed during treatment. In some patients it may necessitate later surgery. Sputum conversion took place in 24 cases, including two treated by artificial pneumothorax, one by thoracoplasty and one by pneumonectomy. In two cases, in spite of streptomycin treatment, masses of granulation tissue required removal at repeated bronchoscopies.

Arterial Perfusion of Liver in Shock.—Delorme's experiments were undertaken to test the hypothesis that acute liver insufficiency occurs in oligemic states. This hypothesis was based on the known disposition of this organ to anoxic injury. A study was made of the relationship between defective visceral blood flow in shock and liver anoxia and of the effect of supplemental oxygen supplies to the liver on the later events in the shock sequence. Experiments were made on 30 dogs in which arterial, venous and oxygenated venous blood were autoperfused into the liver while the animals were maintained at a fixed level of hypotension. Responses of these dogs were compared to those of controls similarly prepared but in which the perfusion was through a systemic vein. The dogs receiving supplementary oxygen by way of the portal vein invariably showed increased resistance to hypotension. The mean survival time was at least twice that of the control group, and loss of vascular tone developed to a lesser degree and more slowly. Dogs given perfusions of venous blood into the liver showed a response in both survival time and rate of vascular collapse similar to that of controls given arterial blood through a systemic vein. Dogs whose livers were perfused with venous blood artificially reoxygenated showed the greatest resistance of any group. These observations are in agreement with the view that a gradient loss of liver function occurs under anoxic conditions and that peripheral vascular responses are directly or indirectly influenced by this failure.

Lyon Chirurgical

46:129-256 (Feb.-March) 1951. **Partial Index**

Anterolateral Cordotomy: Results, Complications and Causes of Failure. J. C. White.—p. 129.
Pseudoaneurysmatic Temporary Dilatation of Carotid Sinus. R. Leriche and J. de Girardier.—p. 141.
Potassium Metabolism in Surgery. A. Brunschwig.—p. 143.
*Removal of Residual Cavities Persisting After Thoracoplasty: Report of 32 Cases. M. Bérard and L. Grézard.—p. 147.
*One Stage Resection of Bifurcation of Aorta for Thrombosis: Technical Considerations, Possibilities and Limits; Report of Two Recent Cases. J. Sautot.—p. 206.

Residual Cavities After Thoracoplasty.—Residual tuberculous cavities may persist after thoracoplasty in 15 to 20 per cent of the patients subjected to this operation. These patients are threatened by a secondary acute exacerbation of their disease or by contralateral dissemination. Treatment of these residual cavities, therefore, is imperative. Many methods of treatment, such as repeated thoracoplasty, secondary apicolysis, minimum drainage and cavernostomy, have the disadvantage that they do not remove the cause of the residual cavity, particularly bronchostenosis. Consequently, lobectomy or pneumonectomy should be preferred, depending on local conditions. Lobectomy was performed by the authors in three of 32 patients with residual cavities persisting after thoracoplasty, while the remaining 29 were subjected to pneumonectomy. There was one operative death due to syncope, two immediate postoperative deaths due to asphyxia and to pulmonary edema respectively and three secondary postoperative deaths due to empyema, bronchial fistula and effusion. Twenty-six patients had an uneventful postoperative course. Dissemination or contralateral spread of the disease did not occur. Radical treatment therefore seems justified, but caution may be advisable in patients aged over 40.

Resection of Bifurcation of Aorta.—Resection of the bifurcation of the aorta was performed for chronic obliterating thrombosis of the bifurcation in two men aged 52 and 47. Both patients had intense pain in the lower extremities, and there was functional sexual impotence. The condition had become rapidly worse during the last year, but the patients had been ill for five and seven years respectively. Aortography in the first case revealed obliteration of the bifurcation of the aorta, but there was excellent bilateral collateral circulation via the last lumbar arteries and the ascending branches of the iliolumbar arteries. Laparotomy was done, and the obstruction of the central portions of the common iliac and internal iliac arteries was relieved by bilateral arteriotomy 2 to 3 cm. long on the anterior aspect of the common iliac arteries. This was followed by retrograde dissection of the two common iliac arteries and of the aorta after the obstructed middle sacral artery was resected. Section of the aorta was then performed in a strongly pulsating but obliterated zone. Recovery was uneventful, and three months after the intervention the patient was able to walk 400 meters (about 1,200 feet) without stopping and his potency was restored. Aortography in the second patient revealed obliteration of the aorta just below the renal arteries. There was no collateral circulation. The common iliac arteries were mobilized and resected, but the external iliac arteries were totally obliterated, and attempts to remove the clots failed. Sectioning of the aorta was carried out directly below the origin of the inferior mesenteric artery, in a thrombosed zone. Microscopic examination of the removed specimen suggested that the patient had a progressive ascending thrombosis of the aorta. The morning after the intervention the patient had no pain and both the legs were warm. On the fifth postoperative day severe pain occurred suddenly in the right leg, there was dyspnea and anuria, purple plaques appeared on both legs and death occurred within 12 hours. It appears that pronounced disturbances due to thrombotic obliteration of the bifurcation of the aorta may be relieved by arteriectomy alone. The transperitoneal approach seems to be preferable under present conditions of anesthesia. Removal of the distal segments of the thrombus may reduce the risk of embolism or of extensive thrombosis caused by ligation in the obliterated zone. The operation is definitely contraindicated in those cases in which aortography does not reveal satisfactory collateral circulation. Bilateral excision of the first and second lumbar ganglions or their infiltration is the only possible treatment in these latter cases.

Medical Journal of Australia, Sydney

2:949-976 (Dec. 30) 1950

Farewell to Academe. J. Medley.—p. 949.
Urological Problems in General Practice. J. S. Peters.—p. 954.
*Treatment of Gastro-Enteritis in Infants with "Chloromycetin." D. C. Fison and E. Singer.—p. 957.
Sarcoidosis: Diagnosis and Management. B. Robinson.—p. 959.
*Syndrome of Cyclic Attacks of Allergy in Childhood. H. G. Breidahl. —p. 961.

Chloramphenicol for Gastroenteritis in Infants.—Gastroenteritis in infants and children has been prevalent in Brisbane since the war years, but treatment with penicillin, sulfonamides and streptomycin has not been entirely satisfactory. When, in 1949, a supply of chloramphenicol (chloromycetin®) became available, the authors gave this drug a clinical trial. With the limited amounts of chloramphenicol on hand they have been able to cure all patients with severe gastroenteritis. From July to September 1949, prior to the use of chloramphenicol, there were 11 deaths from this disease. Since Sept. 10, 1949, when chloramphenicol was first used, there have been no deaths from gastroenteritis—this despite the fact that the epidemic had steadily grown as summer advanced, the numbers of cases in the hospital rising from an average of 15 to an average of 40, and the severity remaining equal. Chloramphenicol is given with the baby's food every three or four hours, in amounts of approximately 100 mg. per kilogram of body weight per day for 10 to 12 days in severe cases. In milder cases, smaller doses and administration for a period of four to six days may prove effective.

Cyclic Attacks of Allergy in Childhood.—Breidahl describes symptoms that frequently accompany asthma in childhood. A prodromal period of irritability lasting about 24 hours is followed by coryza for a similar period. A dry cough gradually makes its appearance and merges into a period of distressed breathing. Pyrexia may be present from the onset of the coryza or may appear later. Anorexia is almost always present during the actual wheezing but may also extend over a much longer period both before and after the wheeze. Abdominal pain and vomiting are observed, the latter usually occurring at the height of wheezing, which lasts one to four days and is followed by a loose cough lasting another few days. The interval after the subsidence of symptoms is usually between two and four weeks; at the end of this period the irritability reappears and the whole cycle of events follows once more. The author suggests that this is a definite syndrome of cyclic attacks of allergy in childhood. He calls attention to the fact that psychological disturbances and febrile coryzal atacks are often quoted as causes of recurrent asthma. However, since these manifestations become much less pronounced when the asthma is controlled by the removal of allergens, they are probably accompaniments and not causes. A common variation of the syndrome is that the attack reaches its climax at the febrile coryzal stage without the development of asthma. A less common variation takes the form of severe abdominal pain and vomiting. Not all asthma in childhood follows the cyclic pattern. Although many of the aforementioned symptoms are commonly met with in children, their allergic origin may not be recognized. The diagnosis of asthma in children and infants is frequently missed. When a history of repeated attacks of coryza, fever, etc., is obtained, it is not advisable to submit an allergic child to intermittent courses of sulfonamides. The possible presence of a mild degree of bronchiectasis should not be overlooked in a child with cyclic attacks of asthma.

Presse Médicale, Paris

59:121-140 (Feb. 3) 1951. **Partial Index**

Sensitivity of Hamster to BCG. P. Hauduroy and W. Rosset.—p. 121
Resuscitation After Anoxia. L. Binet and M. V. Strumza.—p. 121.
*Treatment of Auditory Vertigo by Decompressive Trephining of the Sub-arachnoidal Cisterns. J. Piquet and G. Decroix.—p. 124.

Surgical Treatment of Auditory Vertigo.—Patients with labyr thine vertigo usually show alteration of the inner ear, ch acterized by edematous fluid in the membranous vestibule a in the cochlea, alteration in the endolymphatic duct, which i sometimes widened and sometimes narrowed, and very often a atrophic process of degeneration in the spiral ganglion an organ of Corti. Typical labyrinthine vertigo may also occa sionally orginate in nervous lesions or changes in the cente maintaining the equilibrium. The origin of labyrinthine edem is still uncertain, but it is known that there is a close function connection between the subarachnoidal spaces and the inner ea The labyrinthine pressure definitely depends on the cerebr spinal fluid pressure. Circulation and absorption of the end lymph are still controversial subjects, but whatever the accepte hypothesis, decompression of the subarachnoid space will facil tate the removal of the endolymph. The authors performe trepanation only when conservative treatment had failed (abo 10 per cent of the cases), on patients in a chronic state of ver tigo. Four of the five patients operated on had complete re covery, but in the fifth there was rapid recurrence. Remova of a large portion of bone substance is necessary for an effecti intervention. There is no technical difficulty, but hemostas must be very carefully done, since there is profuse bleedin This treatment should be reserved for patients with vertig caused by labyrinthine edema, but clinical diagnosis is some times mistaken, as it probably was in the author's patient wh had recurrent symptoms. This intervention is not mutilating does not interfere with hearing and usually attenuates th tinnitus.

Revista Médica Dominicana, Ciudad Trujillo

5:265-348 (Oct.-Nov.-Dec.) 1950. **Partial Index**

*Sickle Cell Anemia and Pulmonary Tuberculosis. J. M. Herrera Cabral. —p. 336.

Sickle Cell Anemia and Pulmonary Tuberculosis.—Routine investigation for sickle cells in a group of 138 adolescents (most of them Negroes and mulattoes) showed the presence of these cells in eight. Two of the patients had sickle cell anemia. Six, including those with sickle cell anemia, had acute forms of pulmonary tuberculosis. In all cases the treatment of tuberculosis, including artificial pneumothorax in four cases, phrenicectomy and pneumoperitoneum in one case and the administration of antibiotics and paaraminosalicylic acid in all cases, failed. The author concludes that the presence of sickle cells in the blood and, especially, sickle cell anemia predisposes children and adolescents to pulmonary tuberculosis. Sickle cell anemia aggravates pulmonary tuberculosis. The course of the disease is more acute in Negroes and mulattoes than it is in white persons. It has been believed that the poor economic and social conditions of Negroes and mulattoes are the cause of the high incidence of acute forms of pulmonary tuberculosis among them. However, according to the author, the main factors are the frequent presence of sickle cells in the blood and the high incidence of sickle cell anemia among these persons.

BOOK REVIEWS

Terminal Care for Cancer Patients: A Survey of the Facilities and Services Available and Needed for the Terminal Care of Cancer Patients in the Chicago Area. Paper. Pp. 156. Central Service for Chronically Ill of Institute of Medicine of Chicago, 343 S. Dearborn St., Chicago 4, 1950.

This is an unusually excellent study of a much neglected aspect of the cancer problem. From a study of a large number of cancer deaths in Chicago, Miss Nicholson and her staff present an analysis of the minimum need of terminal cancer patients and of present inadequacies in meeting these needs. Most of the conclusions arrived at, with the exception of those pertaining particularly to the Chicago area, are probably generally applicable. About 80 per cent of terminal cancer patients require care in a hospital or related institution for some period preceding death. The number of institutional beds required for this purpose is in the ratio of one bed to nine annual cancer deaths. These beds should not be in specialized institutions but in general hospitals and nursing homes. Patients remaining at home often need the help of visiting nurses, dietitians and social workers. In a study of 336 patients who died at home, it was found that 30 per cent needed hospitalization but could not afford it and an additional 27 per cent remained at home because hospital or other institutional beds were not available. It is estimated that more than half of all terminal cancer patients are unable to pay all or a part of the cost of the care they require.

This book should be read and studied, not only by those interested in cancer, but by anyone concerned with the growing problems of the care of the chronically ill, of which cancer patients comprise a fairly representative sample. This study was expertly planned and carried out and is reported in a clearcut and well organized style. It furnishes a good example of the methodology of such studies. The Central Service for the Chronically Ill of the Institute of Medicine of Chicago and the Illinois division of the American Cancer Society, which financed the study, have made a significant contribution by this report to the better understanding of an important phase of cancer control.

A Synopsis of Surgical Anatomy. By Alexander Lee McGregor, M.Ch., F.R.C.S., Senior Surgeon, Johannesburg General Hospital, Johannesburg. With foreword by Sir Harold J. Stiles, K.B.E., F.R.C.S. Seventh edition. Cloth. $6.50. Pp. 778, with 746 illustrations by Dr. E. A. Thomas. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

This manual of surgical anatomy comes from the hand of surgeon McGregor, Lecturer in Surgery at the University of Witwatersrand, South Africa. In the foreword Sir Harold Stiles affirms that a book on practical anatomy must be written by a surgeon, after an apprenticeship in the dissecting room and with a foundation of experience gained as a postgraduate lecturer. These attributes McGregor has, and the manual reflects them, bringing to the student, surgeon, or teacher of surgery a well-organized compact volume almost small enough to slip into one's side pocket.

The primary object of the book is to present anatomical and often correlated clinical facts of practical value to the senior student and practitioner. While it covers the whole human body, it is not intended to be an exhaustive anatomical treatise but is expected to act as a quick, readily accessible manual and as a supplement to larger classical volumes on anatomy. It is divided into two parts: anatomy of the normal and anatomy of the abnormal. It contains many practical adjuncts to modern progressive surgery, including the anatomical bases of many clinical tests. The sympathetic nervous system, the intervertebral discs and its problems, the ligamentous structures, joints, the teeth, and the various bursae and their difficulties are discussed in short informative paragraphs, the contents as a whole being presented in terse essays each complete in itself. The illustrations are line drawings befitting the simplicity and teaching qualities of the book. Some references are spread throughout to be picked up on the page perused.

The whole book becomes a storehouse of easily selected anatomical information, especially since the index occupies 40 pages. It is very different from books used in medical colleges of the United States and recalls Treves' "Applied Surgical Anatomy," formerly a very popular small book read profitably by senior medical students. By contrast McGregor's book contains much more knowledge and a far wider spread of material for clinical application and is as readable as Treves.' It would be difficult for one to recall a similar book in the United States except the bare outline of surgery used 50 years ago, Senn's "Syllabus of Lectures on the Practice of Surgery."

This edition contains new chapters on thoracic surgery, surgery of the blood vessels, and the cervicobrachial syndrome, with improvement of the section on the anus. The senior medical student, the practitioner, and the surgical resident could find no better help than this book for easy anatomical information in their daily surgical problems.

The Chewing Approach in Speech and Voice Therapy. Edited by Deso A. Weiss, M.D., and Helen H. Beebe. Cloth. 12.50 Swiss francs. Pp. 118, with 1 illustration. S. Karger, Holbeinstrasse 22, Basel; 215 Fourth Ave., New York 3, [n.d.].

This remarkable book deserves perusal not only by speech and voice therapists but also by the general public, including many physicians, who may not suspect how intensively the field of phoniatry and logopedics has been cultivated. There are nine smoothly written chapters by different authors discussing the theory and technique of their work. An extreme example of the subjects included is the teaching of reading and writing to persons who have never heard and never will hear their own voices because of congenital deafness.

The chewing method, for which much credit is due Emil Froeschels, is described on pages 28 to 30, and the reader who fears that the book will prove to be an uncritical exposition of the ideas of some cult is, for a time, relieved of his misgivings. Unfortunately on page 114 caution is thrown to the winds, and an enthusiastic contributor declares that "the chewing method is the answer to all requirements of education and reeducation of the singing voice." In the absence of an index, the reader wearies of searching for whatever material there might be relating to esophageal speech after laryngectomy. However, the Swiss publishers deserve a compliment for having printed a book in English, with numerous German and French references, apparently without an error.

Recent Advances in Chemotherapy. Volume II (Malaria). By G. M. Findlay, C.B.E., Sc.D., M.D. Third edition. Cloth. $7.50. Pp. 597. The Blakiston Company (Division of Doubleday & Company, Inc.), 1012 Walnut St., Philadelphia 5, 1951.

This excellent volume, second in a series on recent advances in chemotherapy, presents a complete and comprehensive discussion of the chemotherapy of malaria. It is written in a style that should make it equally valuable to the chemist, who has only slight knowledge of medicine, and to the physician, whose background in organic chemistry may be superficial. The author has happily combined lucid style and simple presentation to evaluate and synthesize the vast amount of research that has been done in this field during World War II. Though experts or specialists may argue minor points and conclusions, this volume represents an outstanding contribution to the pharmacology and therapy of malaria. It not only discusses the treatment of human malarias but also covers sufficiently the relationship of chemical constitution to therapeutic effect in avian and other mammalian malarias as well. The relationship of chemotherapy to the biology and natural history of various malarias is adequately treated. Enough of the historical background for more recent work is fortunately included.

This edition is a welcome, scholarly monograph on chemotherapy, which can be recommended to the student and expert alike.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Lehrbuch der inneren Medizin. Band II. Von M. Broglie, et al. Herausgegeben von Helmut Dennig. Cloth. 39 marks. Pp. 1117, with 326 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart-O; Agents for U. S. A.: Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

In the foreword to this volume the editor states that the purpose of the work is to bring practitioners and students up-to-date on the newer knowledge of medicine which has accumulated so rapidly in recent years. Indeed new material has increased so rapidly that the editor has included a chapter in this volume discussing progress made since the publication of the first.

The contributors are F. Schellong (heart and vascular system), N. Henning (digestive system), H. Schulten (urinary system), K. Hansen (allergy), K. Hansen and W. Gronemeyer (toxicology) and the editor, who contributes a chapter on the newer aspects of diagnosis and therapy. As in the first volume, there is a great deal of informative discussion on the normal and pathological physiology of the systems covered and the theoretical bases of allergy and toxicology. There is also considerable detail regarding laboratory, roentgenographic and other technical tests and even physical diagnosis. While by no means disadvantageous, this plan does add bulk to the book as contrasted with the usual American manual. However, it has the advantage of assembling information which, under our current custom, may be scattered in several books.

The book, even though it comprises about 100 pages more than volume one, is not particularly cumbersome. It is sturdily bound in cloth and printed on a good quality of paper in clear type, though in some less important paragraphs the type is small. The illustrations, which include graphs, reproductions of roentgenograms, diagrams, and photographs of patients, are well chosen and clearly reproduced. The section on the nervous system is particularly rich in illustrative material. There is no obvious unevenness in the quality of the contributions by the different authors which are written in clear and simple German. There are no bibliographies, but the index is voluminous.

There are some features of special value such as the arrangement of poisons both under their occupational incidence and also alphabetically, the latter list covering both symptoms and treatment. Occasional omissions of newer poisons, beryllium and marihuana, for example, are noted. As a whole the work can be commended as a clear, informative and accurate survey of current knowledge in the field of internal medicine.

The Social and Biological Challenge of Our Aging Population. Proceedings of Eastern States Health Education Conference, March 31-April 1, 1949. [Under auspices of New York Academy of Medicine.] Cloth. $2.75. Pp. 183, with illustrations. Columbia University Press, 2960 Broadway, New York 27, 1950.

In this volume are 11 papers on the problem of aging. V. Korenchevsky reviews organized research projects in gerontology in this country and abroad and pleads for their more extensive support. Jean Oliver summarizes knowledge regarding the anatomical and physiological changes which accompany old age and clearly indicates the fundamental difficulty of distinguishing pathological effects from those caused solely by "normal aging." Under the title "Controllable Factors in the Process of Aging," F. J. Tisdall presents data suggesting that some of the structural changes considered due to aging may also be caused by nutritional deficiencies. He states: "There is almost a direct correlation between the life expectancy and the per capita consumption of milk, leafy vegetables and fruit" (and one might add, use of automobiles). David Seegal in his paper on longevity and the control of chronic disease discusses and lists chronic diseases now partly or entirely controllable by appropriate therapy or preventive measures. In "Psychological Factors That Have a Bearing in the Aging Process" Edward B. Allen describes the psychological features considered characteristic of the old: impressionable; seeking authority; self preservation dominant over reproductive instincts; and he provides excellent exhortative advice to the prospective oldster. "The Retirement Myth" by Julius Hochman is a convincing brief for the thesis that compulsory retirement at a fixed age is an evil and should be discouraged. The two papers on the population statistics of aging by Clyde V. Kiser and Vasilius G. Valaoras indicate among other interesting points that the chief factor thus far producing a higher proportion of older people has been declining fertility. Declining mortality, being greatest at younger ages, has actually worked against aging. The concluding two papers on sociological aspects are among the most interesting and provocative in the book. Kingsley Davis and J. W. Combs Jr. provide data for their chief conclusion that old age is a problem today because of our family and economic organizations, competitiveness and increasing geographic and social instability. Eduard C. Lindeman offers interesting suggestions for greater utilization of the skills of older persons, particularly in the professions. This volume, although not an exhaustive survey of the biological and social problems of old age, is a useful contribution to the subject.

Honig und Trockenmilch: Biochemie und therapeutische Bedeutung. Von Prof. Dr. Walter Spöttel. Half-cloth. 7.60 marks. Pp. 323. Johann Ambrosius Barth, Salomonstrasse 18 B, Leipzig C 1, 1950.

This work reviews the literature on the biochemical, physiologic and therapeutic properties of honey and its constituents an of dried milk, especially as compared with fresh milk. It presen the results of research on the usefulness in illness and health c a combination of honey, dried milk and dextrose marketed a ho-mi by Nook-Halle. While the main purpose of the work m be to advertise this product, only 33 pages are given to it. Th quality of the paper reflects paper shortages in the Russian zo of Germany, but this appears to be the only thing poor abo the monograph. The 20 page bibliography should be useful.

Leitfaden für den geburtshilflichen Operationskurs. Von Dr. med. Dr.art.obst.h.c. Albert Döderlein. Twentieth edition, edited by Profess Dr.med. Gustav Döderlein, Direktor der Universitäts-Frauenklinik in Jen Boards. 7.50 marks; $1.80. Pp. 272, with 184 illustrations. Georg Thiem Diemershaldenstrasse 47, (14a) Stuttgart O; Agents for U. S. A.: Grune Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

The numerous editions of this small book are a great tribu to the author's father, Albert Döderlein. Very few changes hav been made from the eighteenth and nineteenth editions. Th section on destructive operations occupies 30 pages, but th author defends himself in the introduction by stating that th is necessary because many deliveries are still performed in home by general practitioners and that dead infants are not uncommo there. As in previous editions, there are many drawings whic illustrate the technic of the various obstetric operations. The are clear and instructive. In the United States the Braxton-Hick version is being discarded. In the discussion of breech extractio the author describes and illustrates the use of a rubber tube an also a hook for the purpose of extracting the breech. Both o these maneuvers are dangerous and, therefore, should not b described or illustrated. One minor criticism is the fact that i all the drawings the hands are shown without gloves. The fac that this book has gone through so many editions is sufficien proof that the book is popular in German-speaking countries.

La stérilité involontaire: Evaluation des méthodes de diagnostic et de traitement. Par Raoul Palmer, chef des Travaux de gynécologie à la Faculté de Paris. Avec la collaboration de Mme. Élisabeth Palmer Préface de M. le professeur P. Mocquot. Paper. 1600 francs. Pp. 493, with 88 illustrations. Masson & C^ie^, 120 Boulevard Saint-Germain, Paris 6, 1950.

In this book the author takes up every aspect of involuntary sterility. Because he is interested in celioscopy, he devotes 3 pages to this subject. He insists that celioscopy should neither replace tubal insufflation or hysterosalpingography, but sometimes it should precede these tests to verify their probable innocuousness in cases where there may be adnexal masses. Therapeutically, celioscopy may be used to cut adhesions. In the author's clinic at the Hospital Broca among 214 biopsies, tuberculosis was found to be probably present in 3 per cent. The author maintains that there is no certain test of ovulation except discovery at operation of an ovum or the presence of a pregnancy. However, he believes that ovulation normally occurs on the fifteenth day before the onset of the following menstrual period.

Palmer maintains that vaginal hyperacidity is a frequent cause of sterility, and he prescribes a douche to overcome it. Not everyone believes that vaginal acidity is a cause of sterility. Likewise, some may not have any faith in the use of intubation to overcome hyperanteflexion of the uterus.

The author presents results of his 61 plastic operations on the tubes and also the results of the 60 operations performed by Douay. The incidence of success in both series was 11 per cent, a very poor showing indeed. The best results were obtained in the cases where salpingolysis was performed, the next best were tubouterine implantations and the poorest results were observed in the salpingostomies.

In the discussion on artificial insemination, Palmer mentions that he used artificial insemination employing the husband's semen in 20 cases with four successes. On the other hand, there are serious theological objections to the use of donor semen. He has used donor semen for insemination in only three cases and encountered success in all of them. At the end of the book the author cites the statistics for the Hospital Broca and also his personal experiences for the year 1948. There is also a well selected list of references. This book contains nearly all the essential information about involuntary sterility. The author has been interested in the subject for many years and has made numerous important contributions. Therefore, the statements made in this book are definitely authoritative.

Elsevier's Encyclopædia of Organic Chemistry. Founded by E. Josephy and F. Radt. Editor in Chief: Dr. F. Radt. Series III: Carboisocyclic Condensed Compounds. Volume 12 B: Naphthalene. A. Compounds Containing One Naphthalene Nucleus. Pages 2189-2716: Oxo-Compounds (Except Quinones). Cloth. $50; $43.75 to subscribers to series III; $37.50 to subscribers to complete work. Pp. 2189-2716. Elsevier Publishing Co., 250 5th Ave., New York 3; 118 Spuistraat, Amsterdam, Netherlands; Cleaver-Hume Press Ltd., 42a S. Audley St., London, W.1, 1950.

This is the fourth volume concerning naphthalene compounds and the seventh of the series to appear as a part of this encyclopedia of organic chemistry. A review in THE JOURNAL (134:1513 [Aug. 23] 1947) explains the scope and value of these volumes. The first three books of volume 12 B cover naphthalene and its halogen, nitrogen and hydroxy derivatives. This volume on ketone and aldehyde derivatives of naphthalene is based on the literature through 1944 and information on structure of compounds through 1949. It does not cover the quinones of naphthalene. Included are the physical properties, methods of formation, reaction, physiological properties and derivatives of such compounds as naphthaldehyde, acyl naphthalenes, acyl naphthols, tetralones, octalones, decalones and their halogen and amino and nitro derivatives.

Introduction to Surgery. By Virginia Kneeland Frantz, M.D., Associate Professor of Surgery, College of Physicians and Surgeons, Columbia University, New York, and Harold Dortic Harvey, M.D., Assistant Professor of Clinical Surgery, College of Physicians and Surgeons, Columbia University, New York. Second edition. Cloth. $2.75. Pp. 233, with 12 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1951.

This small work deals with the elementary yet important essentials of surgery. The authors stress correctly the fact that surgery cannot be learned from books or lectures alone, but that the student must be encouraged to observe, record and interpret. Surgery is depicted as a branch of medicine rather than a technique; this is surely to be condoned. Section 3 on the repair of accessory skin structures is especially well done. Under the subject of calculi, it might have been well to include bronchial stones. In the section on specific infections, more space should have been devoted to syphilis, since surgical intervention for syphilitic lesions, although not common, is not rare. The section on drainage is nicely presented. The book is brought up-to-date in the last section dealing with anesthesia, experimental surgery and the general care of the patient. The illustrations are not only mediocre in quality, but they also did not turn out well on the poor paper used. The book as a whole is written nicely and should make a good collateral volume for surgeons and for the study of elementary surgery.

Health and Disease in the Tropics. By Charles Wilcocks, M.D., F.R.C.P., D.T.M.&H., Director, Bureau of Hygiene and Tropical Diseases, London. Cloth. $3.25. Pp. 200, with 33 illustrations by John Hull Grundy and author. Oxford University Press, 114 5th Ave., New York 11; Amen House, Warwick Sq., London, E.C.4, 1950.

This book is designed for use as a manual of tropical public health and disease for the guidance of nonmedical administrators in the British Colonial Service and for other supervisory personnel concerned with the health aspects of tropical living. The author deals chiefly with disease prevention and treatment, but also covered are general measures for the control of water, food, housing and clothing for the preservation of health in the tropics. The subject matter is up-to-date and presented in a nonprofessional fashion but at a sufficiently technical level to appeal to persons with executive training and comprehension. It is also suited to tropical workers in allied fields of science with a partial knowledge of medicine.

The discussions of the various tropical diseases properly emphasize the preventive aspects of management and provide sufficient details of treatment to enable one who is not a physician to achieve some measure of control or relief until professional care can be obtained. The author properly warns of pitfalls in self diagnosis and treatment for conditions in which expert care is essential from the onset of illness. The book also includes some sound advice pertaining to the social problems of administrators and their significance in the promotion of the general health and welfare of persons who reside in the tropics.

This book can be recommended highly to nonmedically trained persons contemplating an extended period of residence in tropical climates.

Encyclopedia of Chemical Technology. Volume V: Di- to Explosions. Volume VI: Explosives to Furfural. Edited by Raymond E. Kirk, Head, Department of Chemistry, Polytechnic Institute of Brooklyn, and Donald F. Othmer, Head, Department of Chemical Engineering, Polytechnic Institute of Brooklyn, Brooklyn, N. Y. Assistant Editors: Janet D. Scott and Anthony Standen. Cloth. $20, each. Pp. 992; 1008, with illustrations. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, 1950; 1951.

Reviews of the early volumes of this set of encyclopedias have stressed the contents that are of interest to the physician. There is no intention to imply, however, that the main body of these volumes would not be of interest also, for there is a wealth of other information concerning related sciences and technologies. The purpose is to review for the physician those portions of primary interest to the medical profession as a whole.

Volume 5 contains articles of medical interest on diuretics and antidiuretic agents, industrial hygiene aspects of dust, emetics and expectorants, enzymes and enzymology and epinephrine. Articles on individual chemicals such as ether, ethylene and ethanolamines include statements concerning health hazards and toxicities encountered with these agents. Other topics of interest include dry cleaning, dyes, eggs, electronics, emollients, demulcents and emulsions.

Volume 6 includes little material on medicine, per se, but there is related information on such topics as folic acid, food, food chemicals, fish-liver oils, fats and fatty acids. In addition, subject headings include explosives, extraction, fermentation, fertilizers, fish and shell fish, fluorine compounds and fuels.

For general knowledge on aspects of principles and economics of technology, this is an admirable set of references.

Diseases of the Tropics. By George Cheever Shattuck, M.D., Consultant for Tropical Diseases, Boston City Hospital, Boston. Cloth. $10. Pp. 803, with 131 illustrations. Appleton-Century-Crofts Company, Inc., 35 W. 32nd St., New York 1, 1951.

Most textbooks dealing with the subject of tropical medicine are unduly long and attempt to present, in addition to material of importance in the tropics, a brief review of cosmopolitan medicine. This book is gratifyingly concise and up-to-date at no expense to thorough coverage of the major diseases of most importance in the tropics. The contents are arranged in 12 parts and deal with the more important infections caused by bacteria, viruses, fungi, helminths and protozoa. In addition, disorders of nutrition and miscellaneous diseases are briefly discussed. The final two sections deal with tropical climates and health, noxious animals, plants and arthropods. The history and epidemiology of the various infectious diseases presented are covered concisely but adequately. The clinical aspects lean in the direction of emphasizing those features which are amenable to clinical or laboratory diagnosis. The therapy prescribed is up-to-date, and in most instances exact schedules of drug administration are given, as well as relevant features related to pharmacology and toxicity of the drugs employed. The type, format and paper make a favorable impression. It is believed that this text is extremely useful for general practitioners in the tropics.

***A Syllabus of Laboratory Examinations in Clinical Diagnosis: Critical* Evaluation of Laboratory Procedures in the Study of the Patient.** Edited by Thomas Hale Ham, B.S., M.D., Assistant Professor of Medicine, Harvard Medical School, Boston. Paper. $5. Pp. 496. Harvard University Press, Cambridge 38, Mass., 1950.

This work is designed "as a teaching aid in the diagnosis and management of the patient, to form a link between preclinical and clinical medicine." The presentation is well adapted to its stated purpose. Emphasis is placed on sources and clinical significance of technological laboratory errors, a normally neglected but practically significant factor in diagnosis. In general, each presentation is divided between pathology and technology.

The book is divided into seven parts, covering the introduction, blood, urinary system, gastrointestinal tract, infectious diseases, metabolic diseases and extravascular fluids. Each section (except the introduction) starts with an over-all analysis of the significance of the applicable test data considered as a whole. This is followed by discussions of the significance and technique of each test. The bibliography is excellent, with many references to publications as late as 1949.

This book can be recommended as an intermediate text for use by anyone interested in clinical diagnosis, its meaning, limitations and possibilities.

Clinical Studies in Psychoanalysis. By Sandor Lorand, M.D., Professor of Clinical Psychiatry (Psychoanalytic Medicine), State University Medical Center at New York College of Medicine, New York. Cloth. $4. Pp. 272. International Universities Press, Inc., 227 W. 13th St., New York 11, 1950.

Eighteen papers are presented, each of which concerns itself with a different clinical syndrome, plus documenting case material, interpreted through dynamic psychoanalytic principles. All cases cited are stated to have been treated by long-term psychoanalytic therapy. They represent on the average a follow-up period of 10 to 20 years after termination of therapy. Particularly interesting chapters are those on the psychology of the inventive or artistic mind and on "success" neuroses. The author is editor of the "Year Book of Psychoanalysis." Presentation of cases and comments concerning them follow closely the fundamental Freudian concepts of psychoanalysis.

***Tell Me, Doctor:* The Modern Woman's Medical Guide.** By Henry Barnard Safford, M.D. Cloth. $2.95. Pp. 256. Renbayle House, Publishers, 1165 Broadway, New York 1, 1951.

In this book the author covers 24 subjects including female anatomy, female physiology, menstruation, pregnancy, sterility, tumors, change of life, labor pain control, operative deliveries, twins and other subjects. At the end of the book is a glossary of terms. The book is well written in a conversational style. The patient asks the physician questions, and he explains in simple language. One may disagree with the author on the value of external pelvic measurements. Also in the taking of morning temperatures in cases of sterility, the oral route is just as effective as the rectal route. The chapter on labor pain control is particularly good, especially the one paragraph devoted to spinal anesthesia. The book can be well recommended because it serves as a most satisfactory medical guide for women.

Chemical Embryology. By Jean Brachet, Professor at University of Brussels, Belgium. Translated from French by Lester G. Barth, Professor of Zoology, Columbia University, New York. Cloth. $8. Pp. 533, with 124 illustrations. Interscience Publishers, Inc., 215 Fourth Ave., New York 3; Interscience Publishers, Ltd., 2a Southampton Row, London, W.C.1, 1950.

The fascinating metamorphosis of the fertilized egg into the embryo occurs in a closed system in which protoplasm is synthesized from stored reserves in the egg. In this manufacture, water, oxygen and minerals are absorbed from the environment. Embryologically, the unfertilized egg and the earlier embryonic stages are relatively simple and, therefore, lend themselves to study by chemical and physical methods. These studies have shed light on the reasons for localization of germ plasm and the fundamental reasons for organization, localization and differentiation of new systems.

The present text maintains the classical motif of embryology, considering first the gametes, then fertilization, classification, cleavage, growth and differentiation, chiefly of invertebrates. The voluminous bibliography and excellent translation combine to make this textbook valuable for students and investigators in biology.

***Illustrations* of Bandaging and First-Aid.** Conpiled by Lois Oakes, S.R.N., D.N. Fourth editon. Cloth. $2. Pp. 308, with 370 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

The first edition of this book was published in 1940 at a time when there was urgent need in Great Britain to mobilize all resources for preparedness. In the preface, Miss Oakes indicates that her aim was to enable the student, by means of pictures, to master quickly the science and art of bandaging and of first aid in fractures and hemorrhages. The section on war wounds has been deleted, and a new section dealing with elastoplast and its method of application has been added.

In the main, the procedures outlined are limited to emergency first aid care. However, at certain points, and particularly in the description of the use of elastoplast, there is a departure from this plan in that the author has developed the therapeutic applications of certain procedures. The sections dealing with shock, hemorrhage and fractures contain much technical medical terminology. Although it is not stated, it is assumed that this manual is intended for the guidance of nurses and not to be used as a textbook by nonprofessional first aiders.

Well selected approved methods of triangular and roller bandaging are demonstrated, including all the commonly involved sites of the body. Numerous illustrative photographs demonstrating the technics on living subjects are nicely correlated with the concisely stated procedures. Adequate space is afforded throughout the book for note taking.

The index is so arranged that it affords ready reference to specific items covered in the contents. This book should be of value to all professional health personnel who are responsible for emergency medical care and of particular interest to those who are now developing the medical phases of the civilian defense program.

Pharmacology and Therapeutics: A Textbook for Students and Practitioners of Medicine. By Arthur Grollman, Ph.D., M.D., F.A.C.P., Professor of Pharmacology, Southwestern Medical School of University of Texas, Dallas. Cloth. $10. Pp. 828, with 104 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1951.

In 1947, Dr. Grollman and Dr. Slaughter prepared the thirteenth edition of Cushny's "Pharmacology and Therapeutics." Much of the text and many of the illustrations of that book have been retained in the present volume. However, the contents have been completely rearranged and are presented in a much more logical sequence. The text has been considerably abridged: although most of the advances of the intervening years have been added, this volume contains only 828 pages while the thirteenth edition of Cushny contained 868. Each chapter begins with an orienting introduction and concludes with a list of United States Pharmacopoeia and British Pharmacopoeia preparations and a short bibliography. An epitome of prescription writing and a classification of drugs according to their therapeutic uses are included as appendices. While this book is too brief and insufficiently documented for the advanced student, it should be of value to the medical student and the physician who desires an up-to-date résumé of pharmacology.

Grundlagen der Gynäkologie: Funktionelle Anatomie, Regulationsvorrichtungen, Untersuchungstechnik für *Studenten,* Ärzte und *Fachärzte.* Von Prof. Dr. med. Heinrich Martius, Direktor der Univ.-Fraunklinik Göttingen. Gemeinsam mit Käthe Droysen als Zeichnerin. Cloth. 23.40 marks; $5.55. Pp. 144, with 113 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; Agents for U. S. A.: Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

This book is divided into three parts. The first deals with the structure and function of the female sex organs and surrounding structures. The second concerns the regulatory and protective apparatus of the female sexual functions, and the third portion deals with special methods of gynecological examinations. Of course, the third part is the most practical. The book is extremely well written, it contains practical advice and it is beautifully illustrated. At the end of the book is a bibliography which should prove most useful. Undoubtedly this small book will become as popular as the author's other excellent books dealing with obstetrics and gynecology.

QUERIES AND MINOR NOTES

FOUR OPERATIONS FOR GALLSTONES

To the Editor:—*A patient has been operated on four times for stones in the common duct within the last two years. Can you suggest a diet, or other means, of preventing the formation of gallstones?*

Herman F. Ahrens, M.D., New York.

Answer.—There is no diet or medical means that can be relied on to prevent the formation of new gallstones. Almost always the explanation of a case such as described is that not all the stones have been removed from the duct system at the previous operations. It is generally supposed that several years are required for the formation of gallstones of any considerable size. Probably in this case there were stones in either the right or left hepatic ducts which were overlooked and not removed at the previous operations. One wonders what care was taken to determine whether all the stones were removed. Cholangiography on the operating table is sometimes of value in the determination of this point.

POLIOMYELITIS

To the Editor:—*The question of intravenous administration of fluids and the correct amount of these fluids in cases of acute spinal and bulbar poliomyelitis always arises. What is the opinion of experts regarding the possibility of aggravating cerebral edema in this way? What would be considered a minimum amount of intravenously administered fluid therapy? In cases of bulbar poliomyelitis, is there any evidence that milk or egg products given through the tubing produces more mucus? Is tube feeding generally considered advisable, and if so, when? What are the current opinions regarding the use of atropine in cases of bulbar poliomyelitis?*

William S. Keenan, M.D., Rockford, Ill.

Answer.—In the acute stage of bulbar and respiratory poliomyelitis, intravenously administered fluid, particularly saline, may aggravate cerebral edema and precipitate circulatory complications, including pulmonary edema. Arterial hypertension is not uncommon in such patients; production of sudden changes in blood volume is therefore risky. The intravenous injection of so-called dehydrating agents, e. g., concentrated plasma, dextrose and sucrose, has at best a transitory effect in reducing brain volume and may be soon followed by a secondary stage of increased cerebral edema. The changes in blood volume associated with the injection of such agents is also undesirable.

Only the basal requirements for body water should be met, with an attempt to keep the urine specific gravity at about 1.025; this can be easily checked. When the basal water intake need cannot be met orally or by tube, then a 5 per cent to 10 per cent solution of dextrose in water may be given slowly intravenously. In the presence of coexisting hypertension the subcutaneous route is safer, but the concentration of dextrose must be reduced. Children over 10 years of age may be limited to 1,200 to 1,500 milliliters total intake daily (including the oral portion) during the critical first week or more of severe bulbar and respiratory poliomyelitis.

Milk and egg products given by tube early in the course of illness appear to augment mucus production in many, and milk may increase abdominal distension. Tube feeding of clear liquids may be given early. As long as there exists risk of tracheobronchial aspiration, an antibiotic with a broad antibacterial range should be used prophylactically. Atropine should be carefully avoided in bulbar poliomyelitis.

CHRONIC OSTEOMYELITIS

To the Editor:—*Please send information on chemotherapeutic and antibiotic treatment of chronic osteomyelitis. My patient is a 30 year old woman, married, with one child. She sustained a compound fracture of the left femur 15 years ago and at six month intervals the skin over the injury breaks down and discharges a granule of bone or dirt. She has had bone curettements by an eminent surgeon.*

Philip J. Lukens, M.D., Ambler, Pa.

Answer.—In cases of chronic osteomyelitis, antibiotic treatment usually is not effective when used alone. In combination with surgical intervention, when indicated, it becomes very effective. In cases in which there are sequestra, where blind cavities are walled off, operation should be performed. Sequestra should be removed, and cavities should be filled with bone from the bone bank. With supplementary antibiotic therapy, many of these can be permanently healed.

SALICYLATE BLOOD LEVEL

To the Editor:—*After the ingestion of acetylsalicylic acid (aspirin) what quantitative salicylate blood level is required to produce substantial analgesia? What is the average intervening period of time required to produce substantial analgesia?* *M. A. Godgson, M.D., Memphis, Tenn.*

Answer.—The administration of 0.65 Gm. of aspirin will result in a peak concentration of total salicylate in the blood of about 4 mg. per 100 cc. in 30 to 90 minutes. For about two hours a substantial amount of the total salicylate occurs as acetylsalicylate, but hydrolysis is fairly rapid. Since some workers (Lester, Lolli and Greenberg, *J. Pharmacol. & Exper. Therap.* 87:329, 1946) believe the analgesic effect to be due to the unhydrolyzed acetylsalicylate, estimations of total salicylate blood concentrations are of doubtful value. Further, objective laboratory measurements of the effect on pain of small amounts of aspirin are not reliable (Gross and Greenberg, New Haven, The Salicylates, Hillhouse Press, 1948). A simple bedside method for the determination of plasma salicylate has recently been published (Miller and Whitehead, *Rocky Mountain M. J.* 46:544, 1949).

ALLERGY IN AN INFANT

To the Editor:—*A baby is allergic to most cereal products (cerol,® pablum®) and many vegetables. Could you recommend some cereal product and/or baby food that might be hypoallergenic? The baby is 2 months old and is nursing.*

L. W. Berry, M.D., Chelan, Wash.

Answer.—The two cereal products to which this 2 month old infant is said to be allergic are both mixed cereals. Cerol® contains wheat, cornmeal, wheat germ and papaya as its chief constituents, while pablum® contains wheat meal, oatmeal, wheat germ, corn meal, alfalfa, dried yeast, salt and reduced iron. The wheat and wheat germ are common to both these cereals, and wheat has a reputation for causing a good deal of allergy in infants. It would be well to try single grain cereals for this infant, such as cornmeal, precooked or plain oatmeal, cream of rice or cream of barley. If the feeding of these cereals is begun slowly, one at a time, those which are hypoallergenic may be ascertained.

Vegetables may well be omitted until the infant is 3 or 4 months old. Spinach, tomato and vegetables of the cabbage family tend to be the most allergenic. Here again, single vegetables should be added slowly to the diet, so that those to which this infant might be sensitive could be detected. Soy bean is relatively hypoallergenic, and some products of this vegetable might be well tolerated by this infant.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

LOSS OF TASTE AND SMELL

To the Editor:—*A patient lost her taste and smell after a head cold seven months ago. I tried many things, but nothing helped. Please advise as to therapy.*

Emil Glas, M.D., New York.

Answer.—Permanent loss of the sense of smell and the sense of taste is comparatively infrequent. Anosmia can be produced either by peripheral or central disturbances. The commoner respiratory form, which is sometimes accompanied by changes in the sense of taste of aromatic substances, occurs in acute rhinitis, acute and chronic rhinosinusitis, atrophic rhinitis, nasal allergy, nasal polyposis, chronic hypertrophic rhinitis, adenoid hypertrophy, with new growths, and, occasionally, as the result of the prolonged administration of nose drops containing tyrothricin. Partial anosmia for all scents may result from excessive smoking and the constant inhalation of irritating fumes. Anosmia due to cerebral tumors or cerebral syphilis follows the clinical course of these entities. Treatment should be directed toward the removal of the basic offending cause. Strychnine prescribed in full dosage is occasionally beneficial when other measures have failed.

NECROSPERMIA

To the Editor:—*In two cases of infertility the Huhner test showed dead sperm. In the condom specimen, there was 25 per cent motility, but the sperms were sluggish. Gram stain of the semen showed 95 per cent normal sperm, and the count was within normal limits. The history, physical examination, blood cell count, sedimentation rate, urinalysis and blood cholesterol in both patients were within normal limits. Can you help me on this?*

C. E. Rozgay, M.D., Oak Harbor, Wash.

Answer.—True necrospermia occurs rarely. In most cases in which such a diagnosis is made, spermatozoa that were alive when produced have been immobilized or killed by a hostile environment. Rubber condoms frequently have this effect, since some of the materials used in their manufacture are strongly spermatocidal. The normal acid vaginal moisture acts in the same way. Except at ovulation time the endocervical mucus is usually thick enough to entangle and immobilize the male cells. All these possibilities should be taken into account before a diagnosis of necrospermia is made. Treatment is relatively unsatisfactory. If the seminal fluid is abnormally viscous as a result of prostatovesicular congestion or infection, these conditions should be corrected. Other measures are largely empirical. The general health and hygiene of the patient should receive attention. Some benefit may be derived from the administration of thyroid in sufficient quantity to keep the basal metabolic rate around the + 10 level. While large doses of testosterone must be avoided because of their inhibiting effect on the pituitary, small doses, e. g., 5 mg. once a day by mouth, may improve the functions of the epididymides, vasa deferentia, prostate and seminal vesicles, with resultant improvement in motility of the spermatoza.

NECROBIOSIS LIPOIDICA

To the Editor:—*A 40 year old man, somewhat overweight, has had multiple varicose veins injections and ligations. He does not have diabetes, but he has necrobiosis lipoidica, proved by biopsy of the affected tissue. Is there anything available to improve it or at least arrest its progress?*

M.D., Massachusetts.

Answer.—This condition develops predominantly in diabetes, which should be ruled out by sugar tolerance tests; lipid values in the blood are often normal. Venous insufficiency aggravates the lesion as it does any other cutaneous defect, so that bandaging and bedrest are advisable. If the lesions appeared after injections of varicosities, the fat necrosis may be due to intravascular thrombi with retrograde spread or extravascular deposit of sclerosing material. If the defect is single, wide excision with suture or skin graft may be possible; otherwise, there is no effective treatment other than controlling elevated sugar and lipid values in the blood.

DIAGNOSIS OF MYOCARDIAL INFARCTION

To the Editor:—*I find the following statements in a recent textbook of medicine: The diagnosis of infarction (cardiac) should not be made in the absence of fever, leukocytosis, relative polynucleosis, relative increase in immature polynuclear cells or elevated sedimentation rate. A diagnosis should not be made on the basis of the electrocardiograph alone. Is this teaching in keeping with present day cardiology?*

Philip J. Dorety, M.D., East Orange, N. J.

Answer.—The diagnosis of recent myocardial infarction should not be based on the presence or absence of laboratory data alone but should depend mainly on the clinical evaluation of the patient and the history. Signs such as fever, leukocytosis and elevation of the sedimentation rate may be absent when an infarct involves only a small area of the myocardium and has rapid restitution. In such cases, also, electrocardiographic changes may be of short duration and can be missed if serial tracings are not obtained. The incidence of electrocardiographically "silent" myocardial infarcts, however, has decreased greatly since the introduction of multiple precordial leads and aV limb leads into routine electrocardiography.

ELECTROENCEPHALOGRAM AFTER TREATMENT FOR COMA

To the Editor:—*How long after a patient has had deep insulin coma treatments will the electroencephalogram be affected by this treatment? Please answer this question with respect to electric shock therapy, both of the grand mal type and brief electric shock treatment type.*

Jules Magnette, M.D., Kaneohe, Oahu, Hawaii.

Answer.—There have been few adequate electroencephalographic studies made after patients have had deep insulin coma treatment. There is some evidence that, when the patient is mentally clear, the electroencephalogram is then normal. This may be during the afternoon of the day on which the patient received insulin. When clinical recovery is prolonged, the electroencephalogram continues to show abnormality during the recovery period. For safety, the electroencephalogram should be postponed until 48 hours after clinical recovery. In reference to electric shock therapy, most patients return to normal in two to four weeks, but a waiting period of eight weeks is recommended.

"BELLY BANDS" FOR INFANTS

To the Editor:—*What procedure is accepted on the use of abdominal binders in newborn infants? For how long a period after birth are they used? Is there any accepted routine preferable for the care of the umbilicus in the newborn?*

Robert J. Ralston, M.D., Holyoke, Colo.

Answer.—Abdominal binders, or the old-fashioned "belly-bands," are no longer in general use for the newborn infant. No covering is necessary for the umbilical stump. When it separates, a raw granulomatous area may discharge until a scab forms and the area heals, and during this period the umbilicus may be covered by a sterile gauze square, which can easily be kept in place by the diaper.

Sponge baths are usually given the newborn infant until the umbilicus is completely healed. After the sponge bath the healing umbilical area may be touched with 70 per cent alcohol on a sterile toothpick cotton swab. After the skin has covered the umbilicus the baby may receive a tub bath, and soap and water may be used to clean this area as other portions of the skin.

MAGNESIUM SULFATE AND BREAST MILK

To the Editor:—*I am interested in the effect of magnesium sulfate, when ingested by the mother, on the breast-fed baby.*

Kathryn A. Rainbow, M.D., Washington, D. C.

Answer.—Magnesium sulfate ingested orally in the usual doses is poorly absorbed from the gastrointestinal tract. Should any excess be absorbed, normal functioning kidneys rapidly excrete magnesium ion. Therefore, there would be little opportunity for ingested magnesium sulfate to appear in milk in sufficient quantities to affect the breast-fed infant.

MORPHINE BY MOUTH

To the Editor:—*How effective are oral morphine and codeine compared to the same dose of the drugs used subcutaneously? Can commercial morphine sulfate solutions be used intravenously? The preparation of morphine sulfate I use contains 0.5 per cent chlorobutanol and 0.1 per cent sodium bisulfite.*

M.D., California.

Answer.—Orally administered morphine and codeine are about two-thirds to half as effective as a similar dose of the drug given subcutaneously. Maximum analgesic effect develops 60 to 90 minutes after subcutaneous injection, and both the degree and duration of effect are longer than with oral administration.

In emergencies morphine sulfate may be administered intravenously, the maximum analgesic effect developing in 20 to 40 minutes, but the degree of analgesia attained and the duration of effect are both less than with subcutaneous administration. The combination of chlorobutanol and sodium bisulfite as preservatives and stabilizers does not interfere with the administration of morphine intravenously.

ALBINISM

To the Editor:—*An officer's first child is a partial albino. An ophthalmologist has reported pigment in the retina, and the child tans slightly during the summer. The family history discloses no other cases on either side of the family. On the paternal side, history can be traced to the child's great great-grandfather and on the maternal side to the child's great-grandmother. The officer and his wife are anxious to have other children but are afraid they, too, may be albinos. What are the chances that future children will be albinos?*

J. H. Watson, M.D.,
Chilliwack, British Columbia, Canada.

Answer.—Albinism is reported as appearing once in every 30,000 births in Italy, once in 20,000 births in Norway, and once in 24,000 births in Scotland. The condition usually is recessive. It affects males somewhat more frequently than females, and it is stated that about 20 per cent of the parents of albinos are cousins. There are a good number of pedigrees of families on record having more than one albino member. In the case cited above, there is a chance that a sibling may also be an albino. This chance is greater than it would be in the population at large and would be increased if the parents or grandparents were blood relatives of each other. In view of the fact, however, that albinism did not appear in either the parental or grand-parental generation, the couple in question might be advised to have another child, with the knowledge that they do take a certain slight risk in doing so. Unrestricted reproduction, undoubtedly, would result in the birth of more normal children than albinos, possibly in the relation of 8 to 1. However, if the next child is normal, it might be well for the parents to limit their family at that point.

FOUL STOOLS IN YOUNG CHILD

To the Editor:—*What is the treatment for mucous colitis in infants? The case in question is that of a 2 year old boy, who has had incontinent, mucous, foul stools since 9 months of age. He has no fever and feels well. His appetite is good; he sleeps well and seems perfect in every other way. Stool smears show no amebas or cysts. Stained smears show only an occasional eosinophil. Culture did not produce any growth. Complete blood count is as follows: hemoglobin, 12.2 Gm.; white blood cells, 8,000; polymorphonuclear cells, 29; lymphocytes, 67; monocytes, 3, and basophils, 1.*

Charles Lewis Concklin, M.D., Corpus Christi, Texas.

Answer.—Before the diagnosis of "mucous colitis" is fully established in this case, other causes for the type of stool described must be excluded. The stool should be examined quantitatively for fat to exclude celiac disease (nontropical sprue) or fibrocystic disease of the pancreas. The presence of pancreatic enzymes in the duodenal aspiration will further differentiate the latter two diseases.

A careful proctoscopic examination is indicated to examine the surface of the rectal mucosa and a swab of the anal orifice, especially at night, to exclude the presence of oxyuriasis. The foul-smelling mucus may be indicative of a bacterial infection. The two organisms that would be frequently associated with mucus are members of the pyocyanase group. They cause foul-smelling, watery stools and grow rather luxuriantly on ordinary laboratory culture mediums. The presence of incontinence calls for a careful neurological examination to exclude involvement of the spinal cord or higher brain centers. Finally, a roentgenologic study of the entire gastrointestinal tract is indicated, noting small bowel motility, and particular attention should be directed at the terminal ileum and colon. Treatment will depend on the findings of the above examinations. If results of all of the above tests are negative, therapy with a low residue diet, mild sedatives and parasympatholytic agents like atropine or banthine® (beta-dimethylaminoethyl xanthene-9-carboxylate), or similar drugs, may be indicated.

FOLIC ACID AND PERNICIOUS ANEMIA

To the Editor:—*Does folic acid administered by muscle or by mouth predispose to cord damage in pernicious anemia? If folic acid and vitamin B_{12} are given together per os, is this danger averted? Would it be advisable to administer folic acid and vitamin B_{12} per os in patients with large subtotal gastrectomy in order to prevent development of pernicious anemia?*

M.D., Pennsylvania.

Answer.—Folic acid whether administered orally or intramuscularly fails to protect against the development of cord damage and may predispose to the development of that condition in pernicious anemia. If vitamin B_{12} is administered orally in large enough doses it will protect against this complication, but it is much more effective given intramuscularly. Neither folic acid nor vitamin B_{12} should be administered routinely in patients with large subtotal gastrectomy. It would seem better practice for one to perform blood studies at suitable intervals to see whether a hyperchromic anemia was developing before instituting treatment.

TOXIC NEURITIS DURING PREGNANCY

To the Editor:—*Are there any contraindications for the use of cortisone or dimercaprol for a case of toxic neuritis in a patient who is five months pregnant? She has had relief from adrenal cortex extract given parentally on alternate days, but no relief from calcium or vitamin B complex. Nicotinic acid in 50-100 mg. doses relieves the pain and difficulty in walking but produces the side effect of severe headaches.*

M. Louise Benefield, M.D., Long Beach, Calif.

Answer.—Cortisone should not be used during pregnancy, because the action of this substance is unpredictable and it may be dangerous for the baby. On the other hand, dimercaprol may be used during pregnancy with safety. Cortisone should certainly be used with the same caution in pregnant as in nonpregnant patients.

TREATMENT OF LUPUS

To the Editor:—*In Europe the trend in treatment of lupus is to give doses of 600,000 I. U. of vitamins at short intervals at the start and later at longer intervals during several months. This is called the Charpy method. The patients have to be watched carefully, because heavy damage might develop. The results are satisfactory in many instances. What is the treatment of lupus in the United States?*

M.D., Spain.

Answer.—The tendency among dermatologists in this country apparently is to use combined treatment, employing both calciferol and dihydrostreptomycin. With this method therapeutic results seemingly are better and quicker and the dosages of both drugs may be lowered. Calciferol usually is administered in doses of 150,000 units daily and dihydrostreptomycin 1 Gm. daily, or both for a limited time with careful observation for untoward reactions.

TREATMENT OF ACNE

To the Editor:—*Please give the treatment for facial acne in the adolescent girl.*

J. Will Tankard, M.D., Newport News, Va.

Answer.—The treatment of acne must be individualized in each case. Much depends on the extent, number and depth of the lesions, the degree of pyodermic involvement, constitutional makeup and the emotional impact of the acne both on the patient and the parents. Certain principles of treatment may be outlined. These should aim at lessening the activity of the sebaceous apparatus, eliminating secondary infection and cosmetic improvement. In general, if the papules are superficial, small and not too disfiguring, satisfactory results can be obtained by the application at night of a mildly exfoliating lotion, such as lotio alba, the use of a nonirritating soap twice daily and some simple dietary restrictions. The patient should restrict the eating of seafoods because of their iodine content; foods rich in fats, such as chocolate, creamed dishes, nuts, fat meats and gravy, and foods that produce flushing of the skin, such as hot dishes, spices and alcohol. If the acne flares at the time of the menses, small doses of estrogenic substances for 10 days prior to the onset of menses often overcome this tendency. Factors such as constipation, hypothyroid activity and anemia should be corrected, and dandruff should be eradicated. Comedos should be expressed by the physician with a proper instrument. If comedos continue to form so rapidly as to constitute a cosmetic defect, vitamin A may be administered, although its efficacy is questioned by many physicians. If the condition fails to improve with these measures, or if it gets worse and the lesions become deep seated or cystic, the patient then may require measures such as cryotherapy, x-ray or solar therapy, treatment with antibiotics or more vigorous endocrine treatment. Such measures, which can cause considerable harm if mismanaged, are a matter for a qualified dermatologist. It should be emphasized, too, that treatment always accomplishes some good. To advise a patient against treatment and to wait for maturity is to practice "horse and buggy" medicine. Unfortunately treatment often has to be prolonged and good results sometimes are slow to develop, but that is true of so many diseases that result from disturbed physiological function. The end result, from both the cosmetic and the psychological standpoint, usually warrants the effort expended.

NEURODERMATITIS

To the Editor:—*A patient with neurodermatitis shows considerable improvement premenstrually, no matter what is being done. Just after the menses, the dermatitis lapses back into its irritable form until just before the next menses. Is there any endocrine therapy that might be of value?*

Clifford H. Kalb, M.D., Milwaukee.

Answer.—During the premenstrual period, the level of progesterone in the blood stream is high. Since the dermatitis in this case improves at that time, it might be well to administer progesterone in an attempt to maintain an elevated progesterone level. The dosage must be determined for each case.

ANDROGENS AND PROSTATIC CANCER

To the Editor:—*Does testosterone initiate or activate latent cancer? I have found that testosterone helps quiet the patient's nerves and in some cases has a beneficial effect on the sex function. Are the larger doses, such as 25 or 50 mg., deleterious? Do natural estrogens have advantages over synthetic estrogen in the treatment of carcinoma of the prostate?*

M.D., Washington, D. C.

Answer.—It has not been proved that androgens initiate cancer of the prostate, although this neoplasm does not occur in men castrated at an early age. However, it is well established that androgens, including testosterone propionate, stimulate the growth of prostatic carcinoma (Huggins, C., and Hodges, C. V.: *Cancer Research* 1:293, 1941). The prostate should be examined at frequent intervals in elderly males treated with androgen. There is no evidence that natural estrogens possess therapeutic properties not present in synthetic estrogens.

DEFLUVIUM

To the Editor:—*A 38 year old woman underwent a thyroidectomy July 5, 1950, for toxic hyperthyroidism. About one month later, the patient developed slowly progressive alopecia. Is this condition known to follow thyroidectomy?*

Louis S. Riccardi, M.D., Marlborough, Mass.

Answer.—Defluvium does develop occasionally after conditions such as infections, toxic states or surgical procedures in which general anesthetics have been employed. In such cases the condition is temporary and the hairs regrow in time. There is a remote possibility, too, that the alopecia in this case may be due to postoperative hypothyroidism.

STRABISMUS IN YOUNG INFANTS

To the Editor:—*In Queries and Minor Notes* (J. A. M. A. **145:***191* [*Jan. 20*] *1951) the statement is made that "operation may be necessary to correct severe true squint: this is usually not undertaken until the child is 4 or 5 years old." For many years matriculates in our eye muscle courses at the New York University Post-Graduate Medical School have heard the late Dr. James W. White, Dr. Aebli, Dr. Brown and me decry the tendency to delay surgery in infants and young children afflicted with high degrees of strabismus. Most mothers bring their children to the ophthalmologist for guidance early in infancy. Here we have a rare medical instance where treatment is sought months before it can be instituted. After the eighteenth month the etiology of strabismus can be accurately diagnosed and medical methods introduced for its correction. The therapeutic measures that may be employed are (1) correction of high degrees of hypermetropia with eyeglasses, (2) occlusion of the fixing eye and (3) atropinization of the fixing eye to encourage visual function in the squinting eye. If these measures fail to decrease a unilateral convergent strabismus of high degree, surgery should be considered after the age of 2 years. Operations when the child is 4 or 5 years old may correct the cosmetic deformity but often fail to overcome amblyopia. An eye cannot squint for years and maintain perfect vision. I have examined many children with unilateral strabismus whose eyesight was permanently damaged by the time they had reached the age of 3 years. For these reasons I have stressed that the right time to operate is as soon as a decision is reached that medical means have proved ineffective (Smith, J. W.: The Problem of Strabismus in Childhood,* Am. J. Ophth. **31:***85* [*Jan.*] *1948). The best chance for restoration of binocular single vision with minimal surgery is between the ages of 2 and 4 years. Procrastination invites secondary contractures in other muscles and provokes additional operations. If surgery fails to effect parallelism, orthoptic training can be utilized to achieve fusion of vision when the child is sufficiently old to cooperate.*

James W. Smith, M.D.,
Clinical Professor of Ophthalmology,
New York University Post-Graduate
Medical School.

FEBRILE RELAPSING NONSUPPURATIVE PANNICULITIS

To the Editor:—*The answer to the query on relapsing febrile—or febrile relapsing—(nodular) nonsuppurative panniculitis, in* The Journal, *Jan. 27, 1951, page 276, ignores the fact that in roughly 2 per cent of reported cases of this disease (namely, one case reported by me in the* Archives of Dermatology and Syphilology, *February 1945) response to sulfapyridine was good, with complete recovery after about a year of intermittent treatment with this drug. So far as I know, no failure with sulfapyridine has as yet been reported in this disease. The patient reported is still well, and there have been no recurrences since about September 1944.*

Harry L. Arnold Jr., M.D., Honolulu, Hawaii.

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ACUTE CHOLECYSTITIS

Robert W. Buxton, M.D., Dean K. Ray, M.D.
and
Frederick A. Coller, M.D., Ann Arbor, Mich.

The management of patients with acute inflammation of the gallbladder has for many years been a controversial subject. Whether the gallbladder should be removed on the diagnosis or whether there should be a delay, with observation, symptomatic therapy and operation at an elected time, are questions which represent the two main extremes of opinion. An analysis of 109 patients with acute cholecystitis treated in the University Hospital in the past 15 years demonstrates the necessity for treating patients individually since they are seen at such varying stages of the acute phase of the disease. The difficulty experienced in confirming a diagnosis early in the course of disease and in predicting the trend of this disorder has led us to adopt certain criteria for early operation. A compilation of the surgical methods used during the years of this analysis shows a variable but increasing conservatism in contrast to the trend generally expressed in current surgical discussions.

The frequency with which acute inflammation of the gallbladder occurs among patients with cholecystitis appears to differ markedly in the judgment of surgeons writing on the clinical evaluation of this diagnosis. Thus, the awareness of this complication and its prompt surgical correction have been greatly emphasized by some, whereas its infrequency elsewhere has brought about little concern or apprehension over its existence. Adams and Stranahan[1] found the incidence to be 5 per cent among 1,104 patients while Heuer[2] noted acute cholecystitis in 23.5 per cent of 1,142 patients. At the University of Michigan Hospital 109 persons had acute cholecystitis in the years 1934 to 1949 in a series of 7,019 patients with all types of diseases of the gallbladder and the biliary tract (excluding neoplasms and trauma), an incidence of 1.5 per cent. While the methods of computing these percentages must differ to some extent, there does appear to be wide variation in the occurrence of this complication of cholecystitis. There is no clear explanation of this changing incidence.

INCIDENCE OF ACUTE CHOLECYSTITIS

An accurate estimate of the incidence of acute cholecystitis is most readily made when early operation is carried out. When a more conservative approach is used, a late review of the benign course, with prompt recovery of many patients for whom the initial diagnosis was acute cholecystitis, frequently questions the correctness of this diagnosis. A diagnosis of acute cholecystitis was made for 338 patients whose records were reviewed in this 15 year survey. Without histopathologic confirmation on all, only 109 patients are acceptable for this study. It is more than likely that many patients treated without operation might have shown acute cholecystitis had the gallbladder been removed and been examined by a pathologist.

Our failure to accept, from a study of the records alone, a diagnosis of acute cholecystitis in many cases in which it was recorded throws some doubt on the not infrequently repeated statement that the clinical diagnosis of acute cholecystitis is not difficult.[3] The prompt recovery of more than twice the number of persons selected for study in this paper indicates the vagueness with which the diagnosis may be made. It also suggests that if it is assumed that a correct diagnosis was made in only part of this group, operation would have been unnecessary in many.

SURGICAL INTERVENTION

The importance of early surgical intervention in the treatment of most patients with acute cholecystitis has been frequently insisted on and widely accepted.[4] Any divergence of opinion is concerned primarily with the

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From the Department of Surgery, University of Michigan Medical School.

Read before the Section on Surgery, General and Abdominal, at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

[1] Adams, R., and Stranahan, A.: Surg., Gynec. & Obst. 85:776-784, 1947.

[2] Heuer, G. J.: New International Clinics 3:121-134, 1940.

[3] (*a*) Eckel, J. H.: S. Clin. North America 30:451-459, 1950. (*b*) Judd, E. S.: Proc. Staff Meet., Mayo Clin. 23:142-147, 1948.

[4] (*a*) Wallace, R. H., and Allen, A. W.: Arch Surg. 43:762-772 (Nov.) 1941. (*b*) Dunphy, J. E., and Ross, F. P.: Surgery 26:539-547, 1949. (*c*) Glenn, F.: Surg., Gynec. & Obst. 90:643-648, 1950. Adams and Stranahan.[1] Heuer.[2] Eckel.[3a]

method of operative procedure and with the definition of the limit of "early" intervention. Prolonged observation with the hope that the existing acute process will subside is admittedly somewhat hazardous since perforation of the gallbladder and the formation of an abscess are known to occur while the clinical manifestations of the disease are subsiding. Yet the experienced physician may utilize this waiting period well for the correction of dehydration, administration of vitamins and antibiotic agents and the restoration toward normal of many upset bodily functions. By so doing the accomplishment of elective operation at a later date may be immeasurably facilitated.

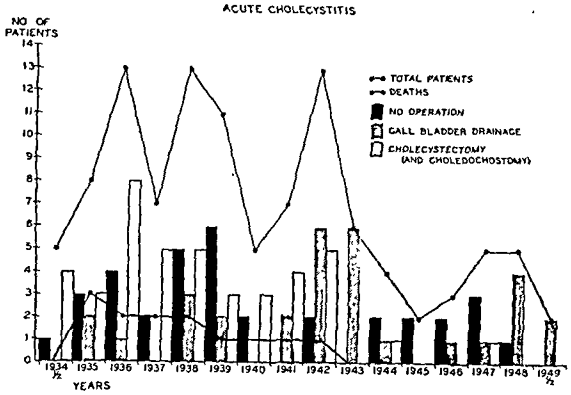

Fig. 1.—Data on 109 patients with acute cholecystitis.

The realization that the condition of the patient at the initial examination is of first importance, rather than the duration of the acute disease, has been a major step in the definition of the time for operation. With this recognition and the prompt correction of existing chemical and physiologic imbalances has come the sharp decline in mortality rates for cholecystectomy and choledochostomy when applied to patients with acute cholecystitis. The term "early surgical intervention" has thus come to mean surgical intervention as soon as the general condition of the patient has been improved to such a degree that it no longer contraindicates operation. Short of this ideal, surgical intervention must be limited unquestionably to simple drainage of the gallbladder.

Great significance has been attached by Heuer,[2] Glenn,[4c] Dunphy and Ross [4b] and others to the low mortality rate of acute cholecystitis treated by cholecystectomy. The disease has been likened in its course and the seriousness of its complications to acute appendicitis, and treatment has been directed, as in appendicitis, to removal of the inflamed organ. That immediate surgical removal of the gallbladder does not constitute the entire explanation for the acute decline in mortality rates for these patients is apparent from a study of figure 1. It is to be noted that in the last decade depicted in this graph there has been but one death from acute cholecystitis, yet the trend of surgical attack has veered sharply toward more conservative management. More likely this improvement in end results has stemmed from our improved preoperative management. Much credit may be given to the intense application of the antibiotic agents as they are now used.

During the entire period of this study 42 patients underwent cholecystectomy (table 1) in the definitive management of their acute disease. More than one half of the operations (27) were done during the first five years covered by this study. Nine of these patients also underwent exploration of the common and hepatic bile ducts; stones were present in the ducts of four. Five, or 11.9 per cent, of the patients died after cholecystectomy. This high death rate, while attributed to the operative procedure, is not necessarily representative of the hazard of the operation at the present time. Two of the patients died after operation of cardiac failure, another of cardiac failure, aspiration pneumonia and pulmonary gangrene, another of pneumonia and the fifth of peritonitis and subphrenic abscess. Conceivably, all might have survived with better preoperative and postoperative management supplemented by the liberal use of the antibiotic agents.

Simple drainage of the gallbladder was done on 31 patients, seven in the early five year period and 24 in the last decade. Three of these patients died, a mortality rate of 9.6 per cent. One of the patients died of hemorrhage, due, probably, to vitamin K deficiency, another of pneumonia and the third of bile peritonitis diagnosed and treated initially as acute, perforated appendicitis. Again, at least two of these patients might well have survived under present day management. In many instances this surgical measure was obligatory because of the patient's general condition or the advanced stage of infection in the biliary tract.

Thirty-six patients underwent no operation at the time of their acute episode of gallbladder disease. These patients were treated with bed rest, sedation, parenteral administration of fluids, gastric suction and later antibiotic agents. Three of them died. One patient was admitted to the hospital moribund, with generalized peritonitis, and the outcome probably could have been changed little at the present time. The second patient was thought to have coronary occlusion and at necropsy had necrotizing cholecystitis, without perforation, and a lung abscess. The third of the patients who died had a perforated gallbladder. He had been treated three months previously for acute gallbladder disease and returned for treatment of the same symptoms, which had occurred for a second time. Operation was deferred, as on his initial admission, and death resulted from prolonged sepsis.

TABLE 1.—*Methods of Treatment of Acute Cholecystitis, 1934 to 1949*

		Deaths
Cholecystectomy		
A. Alone	33	4
B. With duct exploration	9	1
Cholecystostomy	31	3
Medical management only	36	3
Total	109	11
Interval Cholecystectomy		
A. Alone	17	..
B. With duct exploration	14	1
Total	31	1

The over-all mortality rate for patients treated by the aforementioned methods is 10.1 per cent, 11 of the 109 patients dying after the various treatment measures described. This death rate is in sharp contrast to the 2.7 per cent reported by Glenn [4c] from the New York Hospital, the 1.5 per cent mortality rate of Dunphy and Ross [4b] reported from the Peter Bent Brigham Hospital, the 3.6 per cent reported by Adams and Stranahan [1] from the Lahey Clinic and the 5.3 per cent mortality rate reported by Fallis and McClure [5] from the Henry Ford Hospital. In each of these reports the low death rates are attributed to early operation, usually cholecystectomy.

In the present report it is to be noted that the trend in treatment has been away from cholecystectomy as an emergency measure, and coincident with this trend has come marked improvement in patient survival. It seems permissible to theorize that neither gallbladder drainage nor removal has played the leading role in the reduction of mortality but that the significant features of this progress have been improvement in recognition and medical management of the disease and our recognition that failure of prompt improvement necessitates surgical intervention and not continued speculation.

TABLE 2.—*Trauma of the Biliary Duct*

From 1934 to 1949	
2,219	Operations on gallbladder and ducts
497	Exploration of bile ducts
60	Traumatic interruptions (12.0% common duct explored)
16	Inflammatory strictures
Trauma	
39	Seen after first operation
16	Seen after second operation
5	Seen after third operation

Despite improvement in the care of these patients the disease process will advance continuously in some cases and operation will become imperative. The physician will be aided somewhat in his choice of surgical measures by the age and condition of his patient and by his own skill in surgical treatment. Perhaps in the majority of instances it will be his privilege to choose either drainage or removal of the bladder at will. This choice must be based on a sound knowledge of the hazards of each procedure, the patient's response to the treatment and the late expectations of each undertaking.

The hazards of cholecystectomy alone, with or without exploration of the major bile ducts, and without regard for the presence or absence of the acute inflammatory process engendered by acute cholecystitis, require some scrutiny before this procedure can demand precedence over simple drainage. From 1934 to 1949 more than 2,219 operations were done in this hospital on the gallbladder and bile ducts (table 2). On 497 of these patients exploration of the hepatic and common bile ducts was done. Sixty of these operations were for traumatic interruption of these ducts (not effected in this clinic). There is no more tragic sequel to cholecystectomy than accidental destruction of a portion of the duct system. Whether or not this consequence may occur more readily when the bladder or the duct system is the site of acute inflammation cannot be decided. Nevertheless, cholecystectomy done at a later date on the patient not acutely ill may present less hazard to the duct system; in some patients simple drainage may be the surgical measure of necessity.

Whenever cholecystectomy has been the treatment of choice for patients with acute cholecystitis, the mortality rate associated with the procedure has been reported frequently as less than that of cholecystostomy carried out on a similar group of patients. In general, comparison of survival rates [6] from these two procedures is illogical since the simpler procedure, cholecystostomy, has been utilized almost invariably on patients too ill from their primary disease or too debilitated by age or associated disease to undergo the more extensive procedure, cholecystectomy. However, it is well to recognize, too, that many patients for whom drainage of the bladder has been selected as the best measure might well tolerate removal of the gallbladder without difficulty or complication. The decision, then, for removal or drainage of the acutely inflamed gallbladder must be based on the following two premises: (1) an estimate of the patient's ability to tolerate a general anesthetic and the trauma associated with cholecystectomy and possibly choledochostomy; (2) the accepted hazard of damage to the biliary ducts by an operative procedure carried out in their immediate vicinity in circumstances that obscure the normal anatomical picture. Cholecystectomy in any circumstance must be carried out with an acknowledgement of this hazard. The chance that such a complication will result with increased frequency when cholecystectomy is performed in the presence of acute inflammation seems very real to us. Drainage of the viscus, on the other hand, carries no such complication, is accomplished usually with ease on the more seriously ill patient under local anesthesia and should therefore be the more acceptable method of surgical treatment.

The decision to treat all patients with acute cholecystitis by operation is one which also warrants elaboration. This decision has been arrived at by the demonstration that cholecystectomy and choledochostomy in the hands of some surgeons may be accomplished with a minimum of risk to the patient's life and, by removal of the inflamed organ, make cholecystectomy at a later date unnecessary. Cholecystostomy, by the simplicity of its accomplishment and the small number of postoperative complications associated with it, may be a favored method of immediate surgical attack. Both methods presume an accurate preoperative diagnosis.

The diagnosis of acute cholecystitis may be difficult without inspection of the gallbladder at the operation table; it is certainly facilitated by operation on all patients. Evidence of preexisting biliary tract disease, so helpful in anticipating this diagnosis, often is not present before operation. One third of the patients in our present series of 109 gave no history of preceding gallbladder disease. The incidence of radiopaque calculi on abdominal survey roentgenograms was 14 per cent in this same group of patients. A palpable gallbladder, perhaps the most clearcut positive physical finding, was present in 45 per cent of patients some time in the course of their disease. Its presence made confirmation of a tentative diagnosis readily possible. In one half of these patients with a tender, palpable gallbladder subsidence occurred without operation. The failure of the serum amylase level to be elevated, in the differentiation of pancreatitis, was of little comfort. An abnormal electrocardiogram in elderly patients who already had severe cardiac disease was often of little differential diagnostic value. Finally, the fact that several of the patients in this series were operated on under a mistaken diagnosis emphasizes the point that accurate diagnosis in this disease is not always without its difficulties. For these reasons observation, not alone for correction of obvious physicochemical imbalances but also for confirmation of a diagnosis, seems important. If operation is not, then, an obligatory measure, with the only indication being a diagnosis of acute cholecystitis, the following specific indications for such an approach must be outlined:

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[5] Fallis, L. S., and McClure, R. D.: Surg., Gynec. & Obst. 70: 1022, 1940.

[6] Dunphy, J. E., and Ross, F. P.: New England J. Med. 242: 359-362, 1950.

1. The most important of these is failure of rapid and prompt regression of fever, leukocytosis and abdominal signs of acute inflammation under adequate and vigorous medical management. Resolution which is delayed in these circumstances longer than 48 hours must be speeded by operation. While it is true that perforation of the gallbladder may occur while the clinical signs of acute inflammation are subsiding, it is always apparent in the slow resolution of the process.

2. Diabetes is another indication. Control of the diabetic state is precarious in the presence of acute inflammation, and resolution of severe infection is slow and protracted. Arteriosclerotic, renal and hepatic dysfunction may be advanced in the older diabetic patient.

3. Severe cardiac and renal disease is further burdened by severe infection. Drainage of the acutely inflamed gallbladder (under local anesthesia) may be accomplished readily without injury to the cardiovascular-renal apparatus. The prompt resolution of inflammation will favor recovery and control of these abnormalities.

4. Pregnancy makes operation necessary. Two patients in this series were pregnant at the time of onset of their acute disease.

5. Twelve patients in this series were ill with serious complicating disease present prior to the onset of acute cholecystitis. Exacerbation of these concomitant disease processes should favor early correction of the acute cholecystitis.

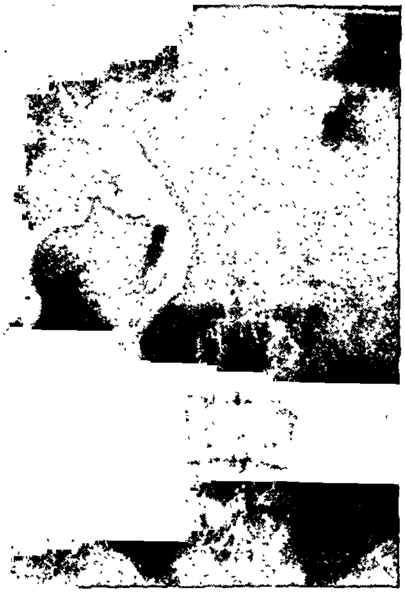

Fig. 2.—Good visualization by contrast medium of gallbladder, and cystic, hepatic and common ducts. No calculi in ducts.

6. Recurrent acute cholecystitis is an indication for surgical intervention. Recurrent acute episodes of cholecystitis were recorded or observed in 13 patients, one of whom had had two such preceding episodes. Three of these patients are dead, one of hemorrhage (vitamin K deficiency), one because of delay when operation was indicated and the third of cardiac failure after two drainages and finally removal of the gallbladder along with exploration of the bile duct. These deaths, occurring in one fourth of the patients with recurrent acute cholecystitis, emphasize the necessity of early operation after recurrence of the acute attack.

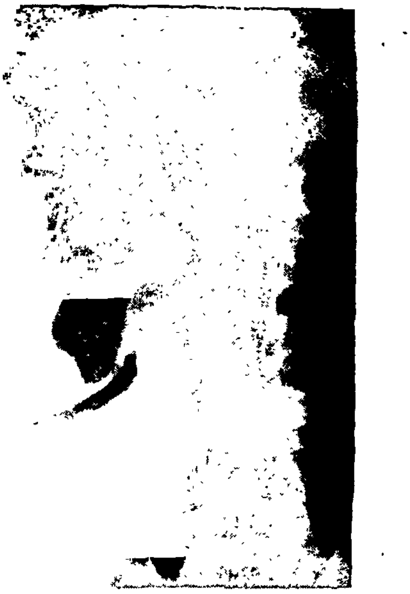

Fig. 3.—Extrahepatic ducts, cystic duct and gallbladder outlined by contrast medium. Left intrahepatic duct not seen.

7. Unremitting jaundice may necessitate operation. Twenty patients in this series had jaundice during the acute phase of their disease. This finding immediately posed the question of whether or not a calculus was present within the major biliary duct system. An answer in the affirmative obligates the surgeon to explore these ducts. We are of the opinion that choledochostomy enhances the morbidity of cholecystectomy, the chance of damage to these ducts and the mortality rate of gallbladder operations in general. Of the 20 patients with jaundice associated with acute cholecystitis, five had complete resolution of their jaundice after cholecystectomy alone without exploration of the major duct system. In another five patients the common duct was explored, and from three of these patients stones were removed. Eight patients had complete regression of jaundice after simple drainage of the gallbladder. Two patients underwent no operation; in one of these the jaundice disappeared after medical treatment alone, and in the other an "unobstructing" stone was present in the duct system at necropsy.

Thus one fifth of these patients with jaundice had calculi demonstrable within the major duct system. To explore the biliary ducts in the remaining 16 patients would seem an unnecessary extension of the operative procedure. Six patients are known to have had stones in the biliary ducts in the absence of jaundice. Since many of the commonly accepted criteria for duct exploration may be masked or minimized by the acute inflammatory process, removal of the gallbladder and duct exploration might better be deferred until roentgenologic examination of the ducts with contrast mediums demonstrates the presence or absence of calculi. Simple drainage, followed at a later date by cholangiographic studies of the duct system (figs. 2 and 3), would solve this problem readily and without hazard to the patient. On the basis of these studies (figs. 4 and 5) either simple cholecystectomy or cholecystectomy with exploration of the duct system could be undertaken logically.

Anticipation of the course of a patient's disease is not always accurate, and methods of treatment cannot often be based on this expectation. We have been interested to note that patients whose disease has existed five or more days before their entry into the hospital almost invariably required operation. On the other hand, 58 per cent of those patients seen and treated within the first two days of the onset of disease survived without operation, while 42 per cent of those seen three to five days after onset did not require operation. Only one of the 21 patients seen five or more days after the onset of their acute disease did not require operation. Since many of these patients were treated prior to our widespread use of antibiotic agents, this disparity may not be as evident in the future.

Thirty-one patients were subjected to an interval cholecystectomy after the subsidence of acute cholecystitis. Fourteen of these patients had their common duct explored, and in five stones were present within the duct. Nineteen patients, treated by cholecystectomy after an interval, had undergone drainage of the gallbladder previously. This represents more than 50 per cent of the patients on whom cholecystostomy had been done. Twelve of the 36 patients who had undergone no prior operation on the biliary tract also were subjected to an interval cholecystectomy.

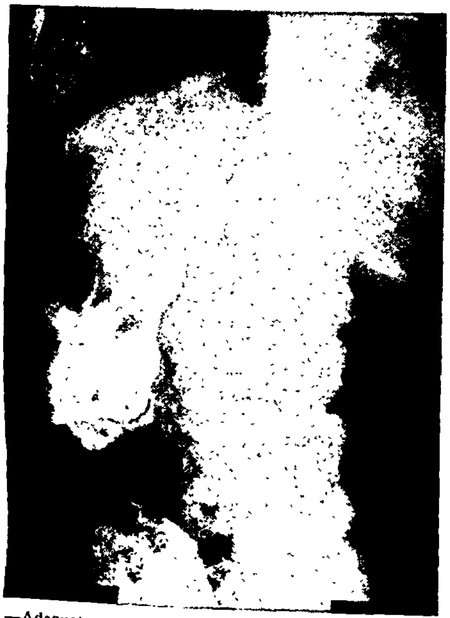

Fig. 4.—Adequate outline of common duct by contrast medium with good visualization of gallbladder and cystic duct. Surgical exploration of ducts indicated.

There was one death in the group of patients subjected to interval cholecystectomy. This patient had undergone a cholecystostomy one month before removal of his gallbladder. He died of hemorrhage two days postoperatively, bleeding occurring into the peritoneum, retroperitoneal area, spleen, lymph nodes and renal pelves. Bleeding was due, probably, to vitamin K deficiency, since it occurred before our knowledge of this vitamin. The patient had had jaundice of fluctuating intensity for three years, and at operation a stone was found and removed from the common bile duct.

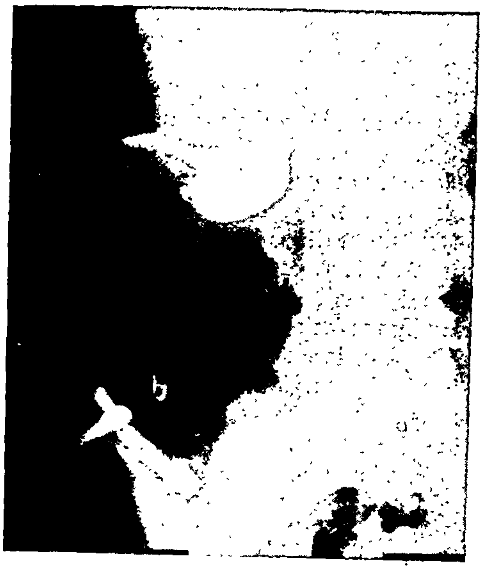

Fig. 5.—Cholecystogram after drainage of gallbladder. Duct system does not fill because of calculus in cystic duct. The hepatic and common ducts are not seen. Surgical exploration of ducts indicated.

Thirty-five patients did not undergo cholecystectomy either as a method of definitive surgical management of their acute disease or as an elective operation after an interval. Ten of these patients were subjected to cholecystostomy during the acute attack of gallbladder inflammation. One of these 10 patients is now dead from carcinoma of the stomach. Nine patients are alive, and only one is without symptoms of recurring gallbladder disease. None has had the gallbladder removed, but one patient has been subjected to redrainage by his physician.

In 25 patients only medical measures were used in the treatment of their acute cholecystitis. Six of these are dead of unrelated diseases. Of the remaining 19 patients, seven (36 per cent) have recurring symptoms of biliary disease.

Thus of the 35 patients treated either medically or by means of gallbladder drainage, 28 are now alive, and one half of these, or 14 patients, have varying degrees of recurring gallbladder symptoms. None has consented to cholecystectomy.

SUMMARY

There is apparently an increasing number of surgeons advising early operation on patients with acute cholecystitis and extolling cholecystectomy (and choledochostomy) as the treatment of choice. A study of a small series of patients presented here demonstrates improvement in our results to the same degree with the use of cholecystostomy and other conservative measures. The inference is that several factors, exclusive of cholecystectomy or cholecystostomy, are responsible for the progressively declining mortality rate, as follows: (1) the acceptance of prompt, early surgical therapy in the patient seen late in his disease, in the presence of severe intercurrent disease, unremitting jaundice or delayed resolution of the acute inflammation; (2) the increasing improvement in the care of any severe infectious process, including acute cholecystitis, by more accurate fluid and electrolyte replacement, recognition and repair of vitamine deficiencies and in the liberal application of a battery of antibiotic agents to cover the full spectrum of bacterial activity. These factors, supplemented by either cholecystectomy or cholecystostomy, have resulted in a sharply declining death rate.

It must be recognized that cholecystectomy is not an obligatory procedure in the presence of acute cholecystitis and that the ease and simplicity of accomplishment of a cholecystostomy and the minimum of operative and postoperative complications associated with it are of great advantage to the seriously ill patient. In the absence of jaundice cholecystectomy may be desirable, particularly when there is acute disease of short duration. In the presence of jaundice associated with acute inflammation, calculus obstruction of the biliary ducts is difficult to verify except by surgical exploration or by cholangioroentgenographic study. After drainage of the acutely inflamed gallbladder the latter procedure is easily accomplished and of infinitely less hazard.

After the termination of an episode of acute cholecystitis treated either by nonoperative management alone or by this method in conjunction with operative drainage of the gallbladder, cholecystectomy is desirable because of the high incidence of recurring symptoms of gallbladder dysfunction.

In view of the dangers of duct injuries associated with cholecystectomy in the presence of the difficult anatomical and pathological abnormalities accompanying acute inflammation of the gallbladder and bile ducts, one should seriously consider cholecystostomy as the operation of choice whenever the acute process makes for technical difficulties. A secondary cholecystectomy under more favorable auspices is a low price to pay for an intact duct system.

ABSTRACT OF DISCUSSION

DR. ALLEN M. BOYDEN, Portland, Ore.: The recent surgical literature has led us to believe that cholecystectomy is the procedure of choice in the vast majority of patients with acute cholecystitis. This teaching has been handed down from many surgical centers, to the extent that our present interns and residents have accepted it as the gospel truth. It is refreshing that a group as well known as Coller, Buxton and their associates is reemphasizing the conservative management of acute cholecystitis in contradistinction to the radical approach. Those of us who are particularly interested in gallbladder surgery are constantly faced with the problems that result from surgical injury to the common and hepatic ducts. Unfortunately, all of us cannot be masters of surgical technique, and it is certainly true that a majority, or at least a sizable percentage, of gallbladder operations are done in small hospitals, in small communities and not in teaching centers. To teach our medical students and interns that the gallbladder should be removed in 90 per cent of all cases of acute cholecystitis as an emergency measure is to me a warning that we can expect many more injuries to the common duct and the hepatic system than we have seen in the past. It is enlightening to find this group of investigators advocating a more conservative and individualized approach to this problem. They are still willing to do cholecystostomy in the severely ill patient with acute cholecystitis who fails to respond to the usual supportive measures. If the patient is seen early—within the first 24 hours—provided his condition is satisfactory or can rapidly be made so and provided, of course, that the diagnosis can be definitely made, it is commonly possible to perform definitive cholecystectomy and choledochostomy before edema and inflammation in the duct system are so marked that accurate visualization is impossible. After 24 to 48 hours it is our custom to approach these patients with conservatism, not with nonoperative treatment but with the hope that their disease will resolve. In this way, as Dr. Buxton has pointed out, many of the patients can await a definitive operation following resolution. Furthermore, the diagnosis in many cases, obscure in the beginning, becomes obvious as time passes.

DR. FRANK GLENN, New York: May I point out, as has been implied by the chairman, that the controversy is not as sharp as it might appear. We all have a common objective, namely, the lowering of the morbidity of complications and of the mortality rate in biliary tract disease. If we operate on a patient in an early phase of the disease, I firmly believe we may interrupt it. Certainly we may interrupt the development of th complications of acute cholecystitis such as gangrene and pe foration. Of even greater importance is interruption of late complications in biliary tract disease such as common du stone and liver damage. The clinic I represent has been accuse of insisting on emergency cholecystectomy for acute cholecy titis. We have stated repeatedly that we believe operatio should be embarked on when the patient has been adequatel prepared and no contraindications are present. The procedu to be done is the one that in the opinion of the operating su geon has the least hazard for that patient. This may be cholecystostomy to tide the poor risk patient over until suc time as a cholecystectomy may be done. As to the incidenc of the disease, I think you will find that when it is a practi in the community to consider acute cholecystitis a surgical co dition the incidence of the disease will appear greater. I a eager to see this situation exist, because if the surgeons assum the attitude that early operation is appropriate, then the inter ists and the general practitioners will bring those patients t the hospital rather than leave them at home, where the com plications of acute cholecystitis may take place and where thes complications may go on to a fatality without their being re corded. Dr. Buxton and his group feel much the same as I d about this. We have today many accessories that we did no have years ago, i. e., better anesthesia, antibiotics and improve surgical technique. These are aids to surgery and the means o a direct approach to the disease. I prefer that we continue t pursue the direct surgical approach, however, rather than rel on fluids and antibiotics in an attempt to control the diseas medically. By the latter we encourage the physician as well a the patient to tolerate the disease and thus allow its complications and sequelae, such as common duct stone, liver damag and even carcinoma of the gallbladder, to develop.

DR. ALTON OCHSNER, New Orleans: About 15 or 20 years ago we became convinced, largely because of the influence of Dr. Mims Gage, that acute cholecystitis in the beginning is a mechanical lesion, that it begins as a result of obstruction and that if one could operate on these persons and remove their gallbladder before they got bacterial invasion the disease would be cut short. As a matter of fact, 96 per cent of our patients in the Charity Hospital have been found to have stones in the gallbladder. At Charity Hospital we have two teaching services the Louisiana State service and the Tulane service. The Louisiana State service for a number of years has practiced the so-called conservative treatment of acute cholecystitis. We on the Tulane service have practiced the immediate operation because we were influenced by the thinking of Dr. Gage. About four years ago we went over all the cases of acute cholecystitis in the Charity Hospital, and it was possible to contrast the results obtained on these two services. As a result of that investigation we have had to alter our thinking. I should like to disagree with Dr. Buxton and his associates on the notion that the time these patients are seen does not make any difference because we are convinced from our own experience that it does make a difference. In our service at Tulane those patients seen and operated on within the first 72 hours all did well. The mortality rate was low. From 72 hours to the ninth day the mortality rate was considerably higher, and we came to the conclusion that acute cholecystitis was not unlike acute appendicitis in that there was a time at which operation was hazardous. We have had to change our method of handling these cases. We now believe that if we can see patients within the first 48 to 72 hours after onset of the disease, immediate operation offers them a chance of rapid recovery before there is invasion of the gallbladder by micro-organisms from the liver and when the lesion is still an obstructive one. If that can be done, the mortality and morbidity are low. If the patient is seen after 72 hours from the onset of the disease, then we feel that a conservative approach should be used and that those complications which occur, unless there is progression of the disease or unless there is jaundice, as Dr. Buxton has stated, make it far better to wait until later to operate. We would heartily agree that those patients who do require surgical treatment after 72 hours should have the least extensive operative procedure done, namely, cholecystostomy.

Dr. Michael E. DeBakey, Houston, Texas: One of the scientific exhibits by Dr. Dublin on the prognosis shows a study of the expected incidence of mortality in gallbladder disease. It is of interest to observe that the mortality was higher among the medical than among the surgical cases. This does not necessarily mean superiority of surgical treatment since there are other factors involved.

Dr. Dean K. Ray, Ann Arbor, Mich.: We, too, have been interested in the duration of this disease as it pertains to the ultimate outcome. The patients whom we have seen from one to two days after the onset of their disease have got well without operation in 58 per cent of the instances. Of those seen within three to five days after the onset of the disease, 42 per cent have recovered without operative intervention. Of those patients seen five days after onset of the disease, only one, or 5 per cent, has required no surgical intervention.

In safeguarding the patient's welfare it is well to recall that anatomical variations are many in the region of the gallbladder and the biliary ducts. Variations of the distribution and confirmation of the arteries, veins and biliary ducts in this region are almost innumerable. Obscuration of these by any pathological process, regardless of its nature, increases the technical hazard of operation in this area. In many instances the more simple operation of cholecystostomy may be the most desirable. Much has been said about the residual cystic duct stump in its relation to the postcholecystectomy syndrome. More should be said about the too short cystic ducts which occasionally result in stricture or interruption of the extrahepatic bile ducts. Another of the relatively sure methods of introducing inflammation and narrowing of the extrahepatic bile ducts is to permit the persistent accumulation of bile in the immediate vicinity. We must obviate this accumulation by adequate drainage of the area. I am sure that observation of these simple fundamentals will result in fewer patients with crippling postoperative biliary disease.

SEMEN STUDIES AND FERTILITY

Edward T. Tyler, M.D., Los Angeles

In no phase of medicine is it more difficult to evaluate etiological factors and therapeutic results than in the problem of infertility. The numerous constitutional and local conditions that can affect fertility of both the husband and the wife are so diversified that in any critical analysis it is difficult to know where to start and when to stop. Results of therapy statistically, on paper, can look impressive, but it is often questionable whether medicine and the physician have triumphed, or whether Nature and coincidence have succeeded. Superficially, it would appear that evaluation of therapeutic results in the husband can be made more readily than in the wife, since the fluctuations in seminal values are easily observed and interpreted. However, even with the present fairly comprehensive standards of semen interpretation, it is quite possible that additional factors are involved that at present are unrecognized and that may greatly affect evaluation of male fertility. It is with these precautionary remarks emphasized early that the following series of 408 infertile couples is analyzed, with particular stress on the husband, based on detailed study of close to 2,500 semen specimens. Specific problems in the wife do not form a part of this report, and excluded from this series are instances in which the wife is totally infertile as a result of such conditions as blockage of the Fallopian tubes. The wives would fit into the classification of "functional" sterility to the extent that significant structural factors either were not present or were largely corrected.

STANDARDS FOR EVALUATION OF THE HUSBAND

In recent years several arbitrary standards for normal semen have been proposed, and, as summarized by the American Society for the Study of Sterility, these include a minimum count of 60,000,000 per cubic centimeter, at least 60 per cent of the sperm initially active (after liquefaction), not more than 25 per cent abnormal forms and an average volume of 2 to 5 cc. Investigators differ, however, concerning the relative significance of various factors of the seminal picture. Williams and Simmons,[1] for example, place great emphasis on the morphological characteristics of the semen. Farris [2] believes the important single factor is the total number of actively motile cells in the ejaculate. MacLeod and Hotchkiss,[3] Weisman,[4] Michelson [5] and others believe that all factors form a composite picture, and that it is the composite picture that indicates the level of fertility.

It is my opinion that in many instances the sperm count per se is a good general index of the fertility level, since on the basis of analysis of the number of sperm per cubic centimeter in this series it was found that the average morphology and motility declined in direct proportion to the count (fig. 1). In the extremely low range of counts (1,000,000 to 19,000,000 per cubic centimeter) 94 per cent of the specimens showed abnormalities of morphology or motility, or both, whereas in the high range of more than 200,000,000 per cubic centimeter only 7.1 per cent showed any disturbance in these factors. However, this correlation of sperm count and morphology and motility cannot be taken as a general rule, and the necessity for complete study of the semen is indicated by the fact that a fairly large number of cases show subnormal

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Attending Endocrinologist, Harbor General Hospital, Torrance, Calif.

Read before the Section on Urology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 30, 1950.

1. Williams, W. W., and Simmons, F. A.: The Clinical Approach to the Diagnosis of Sterility, Urol. & Cutan. Rev. **46**: 558-570, 1942.
2. Farris, E. J.: Evaluation of Sterility Problems of the Male, J. Urol. **61**: 1099-1104, 1949.
3. MacLeod, J., and Hotchkiss, R.: Semen Analysis in 1,500 Cases of Sterile Marriage, Am. J. Obst. & Gynec. **52**: 34-41, 1946.
4. Weisman, A. I.: End Results in the Treatment of Male Infertility: Study of 316 Males, Fertil. & Steril. **1**: 216-232, 1950.
5. Michelson, L., and Michelson, R. P.: Fertility Studies of the Male in Barren Marriages, J. A. M. A. **134**: 941-944 (July 12) 1947.

morphology or subnormal motility, or both, when the count is above the normal limit of 60,000,000. In this series 158 men (38.7 per cent) had initial sperm counts that were below 60,000,000 per cubic centimeter. An additional 53 (12.9 per cent) had normal counts but had subnormal morphology or motility, or both. One hundred and ninety-seven (48.3 per cent) had normal semen specimens.[6] The husband, therefore, showed impaired fertility in 211 cases (51.6 per cent). In the specimens having a normal count with impairment of motility or morphology, the impairment was generally of a moderate degree. In no instance, for example, was there found a specimen with a count over 60,000,000 per cubic centimeter showing complete lack of motility. I believe that necrospermia in the presence of a normal count is extremely rare, if it occurs at all, and that when such a report is given it may most likely be attributed to collection of the specimen in a condom, to delay in examination of the semen, to rapid cooling or to some similar factor. There was one case of true "necrospermia" in which the patient had numerous counts in the range of 30,000,000, but at no time was a viable sperm observed. In two patients in this series repeatedly high counts were obtained (well over 100,000,000 per cubic centimeter), but rapid agglutination took place, so that motility was lost within 15 minutes to one-half hour after ejaculation. I have been unable to explain this type of agglutination. However, by having the patient provide specimens in beakers containing approximately 4 cc. of a mixture of Ringer's and dextrose solution, the rapidity of agglutination was impeded considerably. This may have been solely on the basis of dilution of some seminal factor that caused the agglutination.

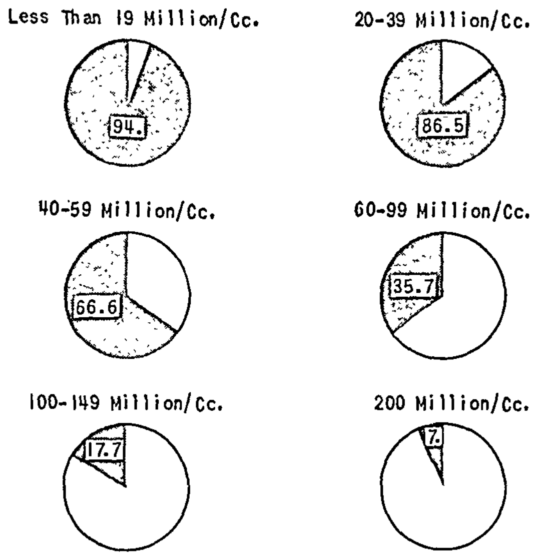
Less Than 19 Million/Cc.
20-39 Million/Cc.
40-59 Million/Cc.
60-99 Million/Cc.
100-149 Million/Cc.
200 Million/Cc.

Fig. 1.—Relation of sperm count to abnormalities of morphology or motility, or both. Dark areas represent percentage showing subnormal motility or morphology, or both. Light areas represent percentage showing normal motility and morphology.

OCCURRENCE OF PREGNANCY AT VARIOUS LEVELS OF SPERM COUNT

In the total group of 408 couples 113 pregnancies occurred. The close correlation between defective semen and pregnancy is indicated in figure 2, which summarizes the number of pregnancies at various levels of sperm count. No pregnancies were observed in this series when the sperm count remained consistently below 20,000,000 per cubic centimeter. (I emphasize "consistently" because I believe that, in some instances in which pregnancies have been reported with the husband's semen in the extremely low range, repeated analyses might demonstrate that an occasional specimen is considerably better.) While 60,000,000 per cubic centimeter may represent a minimal normal, there was a higher percentage of pregnancies when the count was 100,000,000 per cubic centimeter or better. This may be due to a higher incidence of other abnormalities in the 60,000,000 to 100,000,000 group as compared with the group having 100,000,000 or better. Recently, MacLeod[7] reported on a series of 1,000 fertile men and showed that numerous pregnancies occurred at low sperm levels. On the basis of this he proposes that 30,000,000 sperm per cubic centimeter be considered the low limit of normal—if any arbitrary count be used at all. While undoubtedly pregnancies can occur with relatively poor semen specimens, I believe that the possibilities decrease considerably as the sperm count deteriorates, and that, if anything, the present standard of 60,000,000 is too low.

ETIOLOGY OF DIMINISHED FERTILITY IN THE MALE

Unfortunately, patients showing diminished fertility come to the physician when the end result is present, and it is frequently difficult to establish the causative factors. When azoospermia or marked oligospermia is present, physical changes in the testes may often be correlated with the patient's history to provide a reasonable diagnosis. However, in the moderate deficiencies etiology is more likely to be obscure.

Table 1 analyzes the major etiological factors found at various levels. In azoospermia and marked oligospermia (counts of 19,000,000 per cubic centimeter or less) the most important known cause was bilaterally hypotrophic testes, presumably of developmental origin. Patients with sperm counts in the range of 20,000,000 to 39,000,000 and 40,000,000 to 59,000,000 per cubic centimeter showed a fairly high percentage of hypothy-

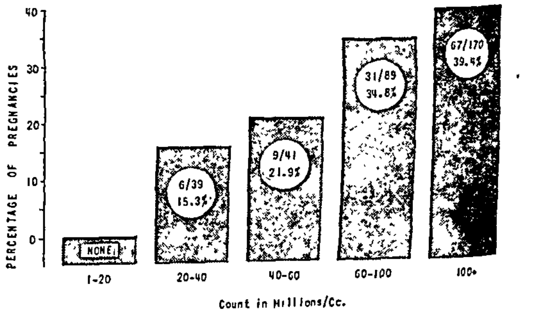

Fig. 2.—Percentage of known pregnancies at various levels of sperm count. Sperm counts shown were the best observed while couple was under investigation. In circles numerator indicates number of pregnancies and denominator number of patients treated.

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[6] With few exceptions, initial semen specimens were taken after a minimum of three days of continence, and all were obtained by direct ejaculation into a glass receptacle. In the majority of cases, at least two preliminary specimens were obtained and the higher one was considered "initial."

[7] MacLeod, J.: Characteristics of Normal Semen, read before the Sixth Annual Meeting, American Society for the Study of Sterility, San Francisco June 24-25, 1950.

roidism as a known etiological factor. In the group with counts above 60,000,000 bilaterally small testes were the highest known cause, but in 67.8 per cent of the total group no specific factors could be discovered.

Most of the patients classified as having bilaterally small testes showed normal endocrine function from the standpoint of male sex characteristics, ability to perform coitus, etc. In the absence of history of mumps, trauma, Fröhlich's syndrome (adiposogenital dystrophy), or other conditions known to be associated with hypotrophic or atrophic testes, it must be assumed that these cases represent developmental anomalies or instances in which circulatory disturbances or obscure prior illness have played etiological roles.

Gonorrhea, in this series of cases, was the second commonest cause of azoospermia but only an occasional cause at other levels of infertility. The importance of gonorrhea in sterility probably is rapidly declining, undoubtedly as a result of chemotherapy and biotherapy and the lowered incidence of the disease in recent years.

While several testicular biopsies were done in this series, the observations in each particular group are not numerous enough to be statistically helpful, and it is quite possible that many cases tabulated as "undiagnosed" might have been classified more accurately if biopsies had been done. However, I have found that, despite considerable opinion to the contrary, testicular biopsy is not an entirely uncomplicated or uniformly innocuous procedure. Several patients on whom biopsies were performed had to lose considerable time from work; a few developed large hematomas that probably caused pressure on the testes and may have added further trauma to them. Because of these factors I have not been convinced that patients should routinely submit to biopsy. However, certainly in those cases of profound diminution of fertility nothing will provide as important prognostic information as a biopsy. Furthermore, biopsy is probably one of the few ways in which additional information can be accumulated about the more obscure causes of male infertility. Nelson,[7a] Simmons [7b] and others recently elaborated specific testicular syndromes on the basis of extensive biopsy studies. They report absolutely no ill effects from this procedure.

TABLE 1.—*Etiological Factors in Subfertile Men at Varying Levels of Sperm Count*

	Semen Level									
	Azoospermia		20,000,000/Cc.		20,000,000 to 39,000,000/Cc.		40,000,000 to 59,000,000/Cc.		60,000,000/Cc. or Over	
Major Factors	No.	%	No.	%	No.	%	No.	%	No.	%
Unilateral cryptorchism	1	2.3	2	6.1	5	13.6	1	2.2	0	...
Bilateral cryptorchism	4	9.3	0	...	0	....	0	...	0	...
Unilateral small testis	0	...	1	3.0	4	10.8	2	4.5	3	5.7
Bilateral small testes (developmental?)	16	37.2	9	27.2	6	16.2	5	11.1	6	11.3
Mumps atrophy (unilateral)	0	...	1	3.0	1	2.7	2	4.5	0	...
Mumps atrophy (bilateral)	2	4.7	0	...	0	....	0	...	0	...
Trauma atrophy (unilateral)	0	...	0	...	1	2.7	1	2.2	2	3.8
Hypothyroidism	0	...	2	6.1	8	21.6	6	13.3	4	7.6
Significant varicocele	0	...	2	6.1	3	8.1	3	6.7	2	3.8
Gonorrhea	8	18.6	2	6.1	1	2.7	1	2.2	0	...
Cause undetermined	12	27.9	14	42.4	8	21.6	24	53.3	36	67.8
Total	43	100	33	100	37	100	45	100	53	100

"CONSTITUTIONAL" ETIOLOGICAL FACTORS

In addition to analysis of specific etiological factors, an attempt was made to evaluate data on certain "constitutional" factors that are frequently thought of as playing a role in the level of fertility. Included in this group are (1) obesity, (2) questionable diet, (3) pronounced malnutrition, (4) excessive use of tobacco, (5) excessive use of alcohol and (6) chronic fatigue. Table 2 summarizes the comparative incidence of these factors in 188 subfertile and 163 normal patients. Although pronounced malnutrition was a relatively uncommon finding, this condition appeared at almost three times the frequency in the subfertile group. Chronic fatigue was a complaint in 19.2 per cent of the subfertile, as compared with only 9.2 per cent of the fertile group. Obesity in the subfertile husbands appeared slightly oftener than in the fertile ones. (Excluded from this category are cases of obesity that belong to the Frölich type of hypogonadism and are presumably on this type of endocrine basis.) Tobacco excesses similarly occurred in a slightly higher percentage of subfertile males. Excessive tobacco usage was arbitrarily set as the smoking of the equivalent of a pack of cigarets a day, or more. Excessive use of alcohol and a questionable dietary regimen showed the smallest variations, use of a deficient diet being even more frequent in the fertile group.

No real correlation was noted between occupation (as in taxi drivers and others who sit for long periods and have excessive heat applied to the testes) and subfertility. One patient who was a welder had relatively poor specimens until he changed occupation, and this was probably a significant factor. Simmons [8] has recently emphasized that patients who are exposed to sudden changes in temperature, as well as those who wear "jockey-type" shorts, may have tendencies toward diminished states of fertility, and that elimination of these factors is of therapeutic importance.

[7a] Nelson, W. O.: Testicular Morphology in Eunuchoidal and Infertile Men, Fertil. & Steril. 1:477-488, 1950.

[7b] Simmons, F. A.: Clinical Interpretation of the Semen Analysis, in Proceedings of Conference on Diagnosis in Sterility, New York, 1945, edited by E. T. Engle, Springfield, Ill., Charles C Thomas, Publisher, 1946.

[8] Simmons, F. A.: The Treatment of Male Infertility, Fertil. & Steril. 1: 193-198, 1950.

THERAPY IN AZOOSPERMIA

In the group of 43 patients showing azoospermia consistently before treatment, no improvement could be noted with any type of therapy employed. In several, biopsy specimens were obtained that showed marked testicular degenerative changes, and these patients could not be expected to respond to therapy. Two men showed functioning seminiferous tubules, and the azoospermia was presumably on the basis of occlusion, but neither patient desired to consider operation. Ten patients in this group were given very intensive courses of gonadotropic therapy (with no real justification), but no sperm were found.

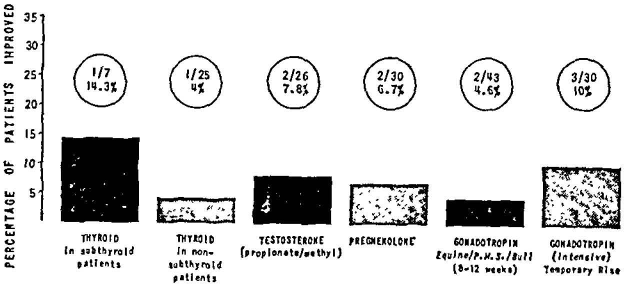

Fig. 3.—Effects of 161 courses of endocrine therapy on subfertile men with pretherapy sperm counts of less than 40,000,000 per cubic centimeter. In circles numerator indicates number of patients improved and denominator number of patients treated. The percentage of patients improved is also shown.

THERAPY IN SUBFERTILE PATIENTS

In a large proportion of the subfertile group of patients, routine study was performed to ascertain possible causative factors. This generally included complete physical examination, examination of prostatic secretions and often gonadotropic and 17-ketosteroid assays. When specific etiological factors were discovered, such as hypothyroidism, specific treatment was employed, but the majority of cases despite careful study showed no specific causes; hence a wide variety of treatment was attempted experimentally.

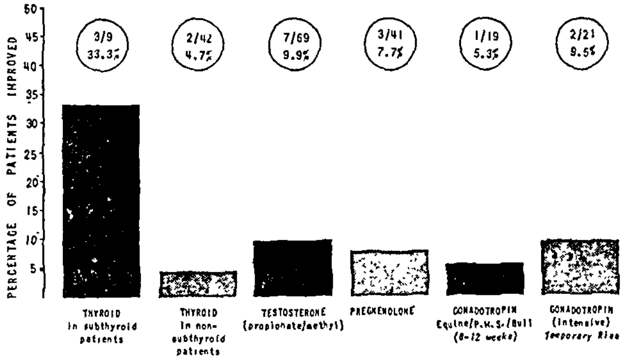

Fig. 4.—Effect of 201 courses of endocrine therapy on subfertile men with pretherapy sperm counts greater than 40,000,000 per cubic centimeter. For explanation of figures in circles, see legend to figure 3.

For the purpose of evaluating therapy, this series has been divided at the 40,000,000 mark, since responses varied depending on whether the subfertility was pronounced or moderate. In addition, therapy was classified broadly into endocrine and nonendocrine types. In evaluating results, every attempt was made to be hypercritical, and a patient was considered improved as a result of therapy only when the results of several pretherapy seminal analyses were known, and when no previous count exceeded a count made during therapy. The importance of several analyses prior to therapy, if one wishes to be objective about results, cannot be overemphasized. It has been my observation that many men vary considerably in their sperm counts with no apparent reason. Several husbands, for example, in the group that was considered fertile because of initial normal semen studies, subsequently showed subpar seminal values when specimens were used for insemination (due consideration having been given to abstinence), and possibly these should rightfully be placed in the subfertile group. However, it is probably common for many fertile husbands to have an occasional subfertile specimen. Zondek[9] believes that there is a group of men with periodic oligospermia who are accordingly subfertile. Probably the difference between the "normal" patient and certain subfertile ones lies in the frequency with which subnormal specimens are ejaculated.

TABLE 2.—*"Constitutional" Factors: Incidence in Fertile Versus Subfertile Men**

	188 Subfertile		163 Normal	
	No.	%	No.	%
Obesity	32	17.5	20	12.3
Questionable diet	18	9.6	21	12.9
Malnutrition (pronounced)	9	4.8	3	1.8
Tobacco (excessive)	48	25.5	33	20.2
Alcohol (excessive)	28	14.9	20	12.3
Fatigue	36	19.2	15	9.2

* More than one factor may apply to same patient.

ENDOCRINE THERAPY

In the patients comprising this series 362 "courses" of endocrine therapy were given, 161 to the subfertile men whose sperm counts prior to therapy were less than 40,000,000 per cubic centimeter and 201 to the group with counts above 40,000,000. These courses are not differentiated from the standpoint of patients, since the same patient may have had at different times two or more of the types of endocrine treatment involved. Results are tabulated in figures 3 and 4.

In explanation of dosage and duration of treatment, the group listed as "thyroid in subthyroid patients" receive ½ to 3 grains (0.03 to 0.19 Gm.) of thyroid daily according to general clinical findings and responses. No patient was considered hypothyroid unless adequate clinical signs were present, together with supporting laboratory data. A subnormal basal metabolic rate alone was not considered an index of subthyroidism, and many of the patients listed in the group, "thyroid in nonsubthyroid patients" had subnormal basal metabolic rates. In this group dosage was ½ to 1 grain (0.03 to 0.06 Gm.) daily. The average course (several were much longer) of thyroid therapy in this group was about 10 weeks. (According to several investigators this may not be an adequate length of time to attain results with thyroid treatment.) Testosterone was given in the form of either 10 mg. of the propionate hypodermically once weekly or 10 mg. of the methyl preparation sublingually twice weekly. This low dosage was directed specifically toward improving sperm motility alone. Pregnenolone (Δ^5-pregnene-3β-ol-20-one), a steroid obtained as a by-product in the manufacture of progesterone and thought by some[10] to be a second testicular hormone, was utilized in the form of tablets given orally and pregnenolene acetate given intramuscularly. Orally the dose was generally 50 mg. a day. By injection the dose varied from as little as 20 mg. twice a week to as much as 100 mg. daily. The average course of pregnenolone therapy was approximately five weeks. Gonadotropic therapy involved the use of one of the following: (1) pituitary gonadotropin, an equine anterior pituitary extract presumably containing large amounts of follicle-stimulating hormone, (2) bull anterior pituitary extract and (3) pregnant mare's serum.[11] A course of gonadotropic therapy averaged eight weeks.

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[9] Zondek, B.; Bromberg, Y. M., and Polishuk, Z.: Constant Oligospermia and Periodic Oligospermia, Am. J. Clin. Path. 18:874-878, 1948.

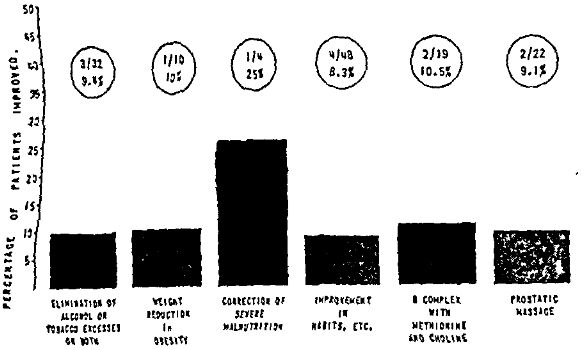

Fig. 5.—Effect of nonendocrine therapy on subfertile men with pretherapy sperm counts of less than 40,000,000 per cubic centimeter. For explanation of figures in circles, see legend to figure 3.

Some patients, however were given shorter, more intensive therapy with gonadotropins in the hope of producing a temporary rise in the sperm count at the time of ovulation. These patients received 125 rat units of equine gonadotropin daily for three to six weeks. Occasionally, such therapy will produce a decided temporary increase in spermatogenesis, particularly, as emphasized by Heller,[12] in those patients with low gonadotropic hormone assays. Precautions must be taken, however, with this type of therapy to avoid antihormone effects, and if it is employed cyclic courses are advisable.

In general, results with endocrine therapy were disappointing. The most consistent improvement was obtained with use of thyroid in subthyroid patients who had moderate seminal deficiencies. Thyroid, however, when administered empirically to nonhypothyroid patients gave poor results. Testosterone was occasionally helpful in improving sperm motility. Pregnenolone, which has recently received national attention in the lay press as an amazing new spermatogenic agent, showed no remarkable effects in this series, with only a few patients exhibiting increase in sperm motility. For the most part, treatment with endocrine preparations resulted in less than 10 per cent improvement, and, while figures in this region may be considered within the margin of experimental error, I feel that with the rigid criteria used they do represent therapeutic effects in some instances. Recently,[12a] it has been suggested that in some men with serious impairment of spermatogenesis, but with some functioning seminiferous tubules, large doses of testosterone be given to produce increased but temporary testicular damage and azoospermia. Following this severe damage, there is supposedly a period of recovery, so that in 1½ to two years spermatogenic function is greatly improved. This "last resort" type of therapy is highly speculative and requires considerable controlled study before it can be advocated.

NONENDOCRINE THERAPY

In addition to endocrine treatment, various types of nonendocrine therapy were employed at controlled intervals. This so-called constitutional therapy included (1) elimination of alcohol or tobacco excesses, (2) weight reduction in obesity, (3) correction of severe malnutrition, (4) improvement in habits, including increased exercise, more rest, etc., (5) utilization of high dosages of B complex vitamins with methionine and choline,[13] and (6) prostatic massage. In patients whose pretherapy sperm counts were consistently less than 40,000,000 (fig. 5), these measures did not effect a great change, although one patient, who had been a prisoner of war and was severely undernourished, did respond remarkably when this condition was corrected. Patients with initial sperm counts in excess of 40,000,000, however (fig. 6), showed a much higher incidence of improvement. Correction of severe malnutrition, from a percentage standpoint, gave the best results, and prostatic massage gave the poorest. Improvement in health habits helped a fairly large percentage of patients (36.7 per cent). Undoubtedly testicular function—particularly spermatogenic activity—is highly sensitive to fluctuations in general health. Administration of B complex vitamins with lipotropic amino acids (methionine and choline) caused improvement in motility in about 23 per cent of

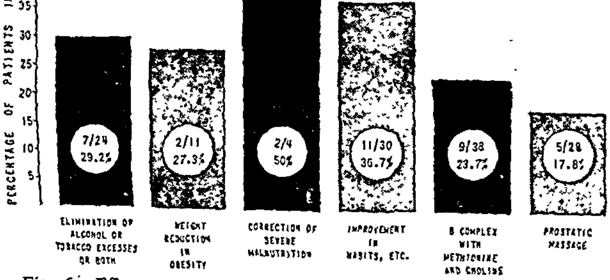

Fig. 6.—Effects of nonendocrine therapy on subfertile men with pretherapy sperm counts of more than 40,000,000 per cubic centimeter. For explanation of figures in graph columns, see legend to figure 3.

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[10] Selye, H.: The Pharmacology of Steroid Hormones and Their Derivatives, Rev. canad. de biol. 1:577-632, 1942. Pregnenolone and testosterone preparations were supplied by Dr. Edward Henderson and Dr. M. W. Amster of Schering Corporation, Bloomfield, N. J.

[11] Dosage of equine gonadotropin averaged 50 rat units three times weekly, of pregnant mare's serum 1,000 international units twice weekly and of bull pituitary, 2 cc. three times weekly.

[12] Heller, C.: Correlation of Testicular Biopsies and Gonadotropins: Their Value in Diagnosis, Prognosis and Treatment, read before the Sixth Annual Meeting, American Society for the Study of Sterility, San Francisco, June 24-25, 1950.

[12a] Heller, C. G., and others: Improvement in Spermatogenesis Following Depression of the Human Testes with Testosterone, Fertil. & Steril. 1:415-422, 1950.

[13] Betolake®-lipotropic (a vitamin B complex preparation) was supplied by Dr. H. L. Daiell, of Lakeside Laboratories, Milwaukee 1. The daily dosage of choline was 600 mg., of methionine 300 mg. and of thiamine hydrochloride 24 mg., with proportionate amounts of other B complex factors.

the patients treated. Therapy with these substances is predicated on the liver-gonad relationship, as reported by Biskind,[14] Glass [15] and others. The lipotropic factors apparently influence estrogen breakdown in the liver and may, through this mechanism, help bring about a more normal androgen-estrogen ratio with concomitant improvement in sperm motility.

COMMENT

In general, treatment of subfertile men, as evaluated in this group of 211 cases, is far from encouraging. The best results are obtained by utilizing general measures in those persons showing moderate subfertile states. Endocrine therapy, for the most part, offers only an occasional chance for improvement. This situation may change when further elaboration of the physiology and function of the testes is correlated with clinical findings by means of biopsy, hormone assays and other studies. Recently, Howard, Sniffen, Simmons and Albright [16] reported on an interesting series of cases of testicular deficiency with exhaustive and correlated data.

What, then, can be done for the subfertile man to help him produce children? Aside from attempts to improve the count per se, general instructions should, of course, be given about timing of coitus, etc. Since repeated ejaculation tends to decrease the count, coitus should be concentrated at the time of ovulation. If the husband abstains for several days prior to this time, he is more likely to have a maximal count. It has been my experience that many husbands with good sperm counts show a pronounced drop when a repeated count is taken 24 hours later. In husbands who are subfertile this drop is even more notable, and, since the viability of the egg is probably no more than 24 to 48 hours, proper timing is important.

Probably one of the most important therapeutic procedures for the subfertile man is the use of his semen for artificial insemination. In my observation a fair number of pregnancies have ensued when artificial insemination has been the only "new" addition to the management of the couple after prolonged periods of therapy of all types. I disagree with the theory that there is little value in affording the sperm a "3 inch boost on 6 inch journey." This may be true when there are large numbers of sperm, but the situation is quite different when the sperm count is marginal or less. Artificial insemination probably does more than help in the journey itself; it may insure a large enough number of sperm reaching the cervical canal when diminished concentrations are present in the ejaculate. After intercourse, despite the high buffering capacity of semen, large numbers of sperm are destroyed by vaginal secretions before they have any chance of getting near the external cervical os. Artificial insemination permits a large bulk of the semen to remain in direct contact with the cervical os; if the fluid is placed on a speculum, there is little contact with vaginal secretions and considerable contact with favorable cervical secretions. Furthermore, in recent years proposed modifications of the artificial insemination technique seem to make the procedure more therapeutically effective. One such modification involves the use of a split ejaculate from the husband. Since it has been demonstrated that approximately three fourths of the total sperm content of the semen is ejaculated in approximately the first third of the specimen,[17] the use of a split ejaculate provides a method of obtaining more concentrated specimens. The experiments of Chang [18] and others on rabbits point definitely to the conclusion that the concentration per cubic centimeter rather than the total count of a specimen is far more important in causing fertilization. Chang showed, for example, that equal numbers of sperm diluted in 0.1, 0.5 and 1.0 cc. produced wide variations in the number of fertilizations, with the 0.1 cc. concentrate being roughly 10 times as effective. Clinically the apparent relation of concentration, rather than total count, to fertility is emphasized in those subfertile males who demonstrate high total counts but low concentrations as a result af abnormal volume. I have seen several men with counts in the region of 20,000,000 to 40,000,000, with repeated volumes of over 10 cc. Patients of this type in particular are excellent candidates for artificial insemination with split ejaculate. Even in the presence of normal volume, the split ejaculate in husbands with diminished counts will permit obtaining a portion with a higher concentration that may be placed directly in contact with the cervix. The remainder can be placed in the vagina as a buffer to the vaginal secretions.

Another recent modification in the artificial insemination technique has been the use of a plastic cervical cap, as reported by Whitelaw.[19] This method involves placing the semen in a plastic cap that fits over the cervix and may remain *in situ* for six to 24 hours. The use of the cap [20] circumvents the effect of vaginal secretions on the sperm and, by maintaining constant contact of the semen with the cervical os, favors sperm migration.

An attempt was made to gain some impression of the success of artificial insemination by analyzing pregnancies that took place in the 211 cases in which the husband was subfertile. Forty-one known pregnancies occurred in this group. (In several cases, of course, pregnancy may have occurred after the discontinuance of therapy.) Eliminating the patients with azoospermia and those inadequately followed, there were 41 pregnancies in 161 couples of this group; 98 of these were treated with artificial insemination (repeated inseminations) and 63 were not. Thirty-three pregnancies occurred in those treated with artificial insemination (33.7 per cent); eight pregnancies occurred in the 63 cases in which artificial insemination was not employed (12.7 per cent). Since artificial insemination was not the only therapy used in these patients, it should not be assumed that the percentages obtained are attributable directly to this procedure. While these statistics are very limited and influenced by many factors, they do seem to indicate an increased possibility of pregnancy with this measure.

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[14] Biskind, M. S., and Falk, H. C.: Nutritional Therapy of Infertility in Male, with Special Reference to Vitamin B Complex and Vitamin E, J. Clin. Endocrinol. **3:** 148-153, 1943; abstracted, J. A. M. A. **122:** 706 (July 3) 1943.

[15] Glass, S. J.: Liver-Gonadal Syndromes as a Cause of Sterility, Urol. & Cutan. Rev. **52:** 542-586, 1948.

[16] Howard, R. P.; Sniffen, R. C.; Simmons, F. A., and Albright, F.: Testicular Deficiency: A Clinical and Pathologic Study, J. Clin. Endocrinol. **10:** 121-186, 1950.

[17] Hotchkiss, R. S.: Fertility in Men: A Clinical Study of the Causes, Diagnosis, and Treatment of Impaired Fertility in Man, Philadelphia, J. B. Lippincott Company, 1944.

[18] Chang, C., in Proceedings of Conference on Diagnosis in Sterility, New York, 1945, edited by E. T. Engle, Springfield, Ill., Charles C Thomas, Publisher, 1946.

[19] Whitelaw, M. J.: Use of the Cervical Cap to Increase Fertility in Cases of Oligospermia, Fertil. & Steril. **1:** 33-39, 1950.

[20] The cervical cap is manufactured by Ortho Pharmaceutical Corporation, Raritan, N. J.

One inescapable conclusion can be drawn from these and other studies of male infertility. The limitations of therapeutic possibilities in the male make preventive medicine of extreme importance in this particular problem. More attention should be given by pediatricians and others who treat children to careful examination of the testes and to the seemingly minor variations in gonadal development that may ultimately result in profound disturbances of fertility.

SUMMARY AND CONCLUSIONS

Etiological factors and therapeutic results in 408 infertile marriages are evaluated chiefly from the standpoint of the husband. A total of 211, or 51.7 per cent, of the men could be classified as subfertile.

Analysis of the semen in this study demonstrates that there is a general relationship of the sperm count with morphology and motility, but that numerous patients with a normal count will show disturbed motility and morphology. This emphasizes the need for complete seminal studies.

The occurrence of pregnancies in this series increased proportionately as the sperm count approached normal. No pregnancies were observed when the sperm count remained consistently below 20,000,000, and the greatest incidence was in couples in which the husband's sperm count was above 100,000,000 per cubic centimeter.

Forty-three patients had complete azoospermia, the cause of which in approximately 40 per cent was bilaterally hypotrophic testes, presumably on a developmental basis. Other etiological factors are tabulated for the sterile patients, as well as for those with various degrees of subfertility, on the basis of the level of the sperm count.

The results of endocrine and nonendocrine therapy are reviewed. Nonendocrine therapy affords a better chance of improving the sperm counts, particularly in those patients showing borderline or moderate states of subfertility.

The generally low percentage of improvement of sperm counts obtainable with present day therapy makes it mandatory to utilize the patient's sperm potential to best advantage. This includes instructions in regard to proper timing of coitus, avoidance of intercourse at nonfertile times of the cycle and artificial insemination. Of greatest importance to the solution of the problem of male infertility today is preventive medicine in childhood.

921 Westwood Boulevard.

ABSTRACT OF DISCUSSION

Dr. Lewis Michelson, San Francisco: Figures below the normal sperm count do not mean that the husband is sterile, but they do mean that it is more difficult for him to produce a pregnancy than a normally fertile male. I have seen many women become pregnant whose husbands had counts of 15,000,000 to 20,000,000 per cubic centimeter and at least five cases in which the count was under 1,000,000. Two women have produced two children each when the spermatozoa count was under 500,000 per cubic centimeter. This finding, in conjunction with Dr. Tyler's observation that "no pregnancies were observed when the sperm count remained consistently below 20,000,000," points to a relative fertility that may be due to an unrecognized or still unknown incompatible factor, or factors, present in one or both spouses and preventing the production of an offspring. This factor, or factors, may account for the many apparently fertile couples in whom no conception takes place. Approximately 30 per cent of the couples who consult me because of a barren marriage come under this perplexing category. There is an important constituent of the semen that is constantly overlooked and the study of which should be emphasized. That is the spermatogenic cell. Spermatogenic cells are continually being cast off and are present in the lumen of the seminiferous tubules and ejaculated with the semen. Normally they do not exceed 0.5 to 1 per cent of the spermatozoa counted and consist mostly of spermatids. However, when this percentage is increased greatly and includes many deformed spermatids and spermatocytes, and even in some cases spermatogonia, marked degeneration of the germinal cell layers is present. The results of such a study in this greatly neglected field will aid greatly in determining the extent of the disease process of the testis. Also, in certain cases of azoospermia the finding of germinal epithelial cells in the semen demonstrate, of course, that the vasoepididymal ductal system is not completely blocked. "Endocrine therapy, for the most part, offers only an occasional chance for improvement." This sane and conservative statement in Dr. Tyler's paper gave me pause, and I believe the greatest service I can do members of this Section is to warn against the prevalent indiscriminate use of gonadotropins and androgens. The widespread practice of giving every patient who complains of infertility "shots" is to be condemned. I have seen men with absent vasa who were treated for azoospermia for months before a competent examination was made and the congenital anomaly recognized. On the other hand, organized, trained groups, such as those of Heller, Simmons, Tyler and others, who utilize the services of the clinician, the surgeon, the biochemist and the pathologist, are making real advances in helping to select the cases suitable for hormonal therapy and evaluating the results of this form of treatment.

Dr. M. James Whitelaw, Phoenix, Ariz.: One of the most important facts that emerged from Dr. Tyler's paper is that nearly 50 per cent of the infertility in his series was explainable on the findings in the male. Only a few years ago most of us, unfortunately, were oblivious to this point. The second fact that emerges from this paper is that over 40 per cent of cases of azoospermia were on a basis of morphological alteration in the testis presumably at the time of puberty and were not due to blockage by gonorrheal involvement. There is some indication that the changes in the basement membrane and seminiferous tubules may be an inherent defect, and these changes possibly could be classified as a collagen disease. It would be very interesting, therefore, to follow semen studies in conjunction with the work being done with pituitary adrenocorticotropic hormone and cortisone. In making a diagnosis of infertility in the male, Dr. Tyler's point is well taken; that is, it is foolish for us to make a diagnosis on the basis of only one specimen. It would be exceedingly helpful in diagnosis to take a biopsy specimen in all questionable cases. It is impossible in patients with azoospermia to differentiate normal testes with blockage from testes that are incapable of spermatogenesis. A plastic operative procedure will depend entirely on the biopsy findings. By this method the capacity of the tubules to produce both normal and pathologic sperm can also be determined. In diagnosis, in communities where it is possible, determination of the follicle-stimulating hormone and sometimes of the 17-ketosteroid titers is important because, as Dr. Tyler has again pointed out, if the titer of follicle-stimulating hormone is low, there is, for the first time, an indication for giving gonadotropins. I should like to emphasize again a point that has been repeatedly stressed and that is applicable in this age of cortisone. On removal of unilateral cortical tumors of the adrenal gland, it has been common experience to have the patient die of adrenal insufficiency the following day, and to find at autopsy atrophy of the opposite side. This phenomenon, which is known as Selye's compensatory atrophy of the adrenal gland, can be produced when one gives cortisone. Use of pituitary adrenocorticotropic hormone does not produce this undesirable effect. In other words, if you flood the body with an exogenous hormone, you may produce compensatory atrophy, because when androgens are given to a male the interstitial cells no longer need to supply endogenous testosterone. I would like to leave that one point with you, that when we are giving hormones we may produce the opposite end results from those we intend.

Dr. Edward T. Tyler, Los Angeles: Dr. Michelson's report of noting pregnancies in instances in which the sperm counts were no better than 1,000,000 per cubic centimeter emphasizes the need for conservative prognosis in infertile cases. However, these isolated successful cases should not necessarily lead to lowering of values for normal semen. It does not seem likely that we would see so many men with counts of 100,000,000, or even 200,000,000 or better, if 30,000,000 can really be considered normal. I do not believe the human physiology has that wide a range of fluctuation; it does not have it, for example, in blood cell concentration. I am emphasizing this because, if we consider patients showing consistent counts in the range of 30,000,000 as normally fertile, we are going to overlook many subfertile men. Certainly, physicians doing inseminations would not ordinarily accept a donor with consistent counts of 30,000,000 per cubic centimeter whether he had produced a child or not. Pregnancies, of course, can occur with low semen values, but it is the degree of possibility that is important. Concerning Dr. Whitelaw's comments on biopsies, I agree they give us considerable information. Unfortunately, certain of my patients from whom biopsy specimens were taken had minor but inconveniencing complications. Possibly better standardization of the technique will avoid this. Several points were raised by other discussants in relation to comparative studies in human beings and animals. Histories of successive generations are much less readily obtained in human beings than in animals. Such data are routinely acquired but frequently one is at a loss regarding their proper evaluation. I have frequently noted histories of good immediate background, with subsequent occurrence of infertility. At the current meeting of the American Society for Study of Sterility, Stern presented a paper analyzing family histories of succeeding generations, in which he showed a tendency toward sterility on the basis of genetic composition. This study is one of the few presentations of "hereditary" sterility in human beings. The correlation of suboptimal semen with incidence of abortion in human beings is difficult. It takes a large number of cases to mean anything—far more than the average clinician would accumulate. Here again, though, we can go overboard in our interpretations. In one case, for example, in which a doctor's wife had had four abortions, the husband's semen showed consistently poor morphology, and despite various attempts at therapy no improvement in semen specimens was noted. The couple decided to try again, despite the abnormal morphology, and the fifth pregnancy was successful. A single illustration such as this means little clinically, but it serves to keep us from being too dogmatic in our interpretations and assertions.

PERSONALITY STRUCTURE IN RELATION TO TETRAETHYLTHIURAMDISULFIDE (ANTABUSE®) THERAPY OF ALCOHOLISM

Captain Paul W. Dale, Medical Corps, United States Army
and
Franklin G. Ebaugh, M.D., Denver

It was only two years ago that the Danish physicians Hald, Jacobsen and Larsen[1] announced their discovery of the sensitizing effect of tetraethylthiuramdisulfide (antabuse®[2]) to ethyl alcohol; and it was only shortly thereafter, in association with Martensen-Larsen,[3] that they told of their initial clinical experience with this substance in the treatment of chronic alcoholism.

During these two years this drug has received increasingly frequent use. In the near future we shall publish an article[4] reviewing the literature to date. Four other papers[5] on tetraethylthiuramdisulfide in the treatment of alcoholism were read at the American Psychiatric Association meeting in May 1950.

For purposes of brevity, we shall say little about the pharmacology and toxicology of this drug. It will suffice to mention that tetraethylthiuramdisulfide in some way alters the normal metabolism of ethyl alcohol, resulting in the formation of acetaldehyde in the blood stream, which creates a multitude of toxic symptoms. The principal effects are centered in the cardiovascular system. Once this reaction is experienced, the majority of persons refrain from taking alcoholic beverages; and if they should do so they would become so ill as to be prevented from continuing their drinking. Thus, tetraethylthiuramdisulfide creates a biochemical intolerance to alcohol. Of even more importance, we have noticed in many patients, depending upon the structure of their personality, the appearance of psychologic reactions to tetraethylthiuramdisulfide therapy. It is the psychologic aspects of this therapy which we should like to discuss.

These observations are presented as a preliminary report. We have had only a year's experience with this new therapy of alcoholism, and our series of cases now numbers 60. One year is but a brief time when one is considering a chronic relapsing disease like alcoholism. We feel that the patients who are "dry" to date cannot be termed therapeutic successes; rather, we should look upon them as having a remission of symptoms. It is probable that in many of these patients tetraethylthiuramdisulfide has played an important part in producing this remission. It goes without saying that there will be some relapses in those patients who at present have remissions.

This paper is a study of the emotional reactions of the alcoholic to tetraethylthiuramdisulfide therapy and of those patients who have not abstained from alcohol. These aspects are related to the personality structure of the individual alcoholic patient. We think that an analysis of the patients who have had relapses while on tetra-

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From the Department of Psychiatry, Colorado Psychopathic Hospital, University of Colorado School of Medicine.

Read before the Section on Nervous and Mental Diseases at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

1. Hald, J.; Jacobsen, E., and Larsen, V.: Sensitizing Effect of Tetraethylthiuram Disulfide (Antabuse) to Ethyl Alcohol, Acta pharmacol. et toxicol. **4:** 285-296, 1948.

2. Antabuse® was supplied for research purposes through the courtesy of Ayerst, McKenna & Harrison, Ltd., 22 East Fortieth Street, New York.

3. Martensen-Larsen, O.: *Treatment of Alcoholism with a Sensitizing Drug*, Lancet **205:** 1004-1005, 1948. Jacobsen, E., and Martensen-Larsen, O.: Treatment of Alcoholism with Tetraethylthiuram Disulfide, J. A. M. A. **139:** 918-922 (April 2) 1949.

4. Dale, P. W., and Ebaugh, F. G.: The Use of Antabuse in the Treatment of Chronic Alcoholism, Am. J. M. Sc., to be published.

5. Bowman, K. M.; Simon, A.; Macklin, E. A.; Anderson, H. H.; Burbridge, T. N., and Hine, C. H.: Clinical and Pharmacological Evaluations of Antabuse® (Tetraethylthiuramdisulfide) in Problem Drinkers, read before the American Psychiatric Association, Detroit, May 4, 1950. Bennett, A. E., and McKeever, L. G.: Thiuramdisulfide (Antabuse®) in the Treatment of Alcoholism, read before the American Psychiatric Association, Detroit, May 4, 1950. Epstein, N. B., and Gould, J.: Further Clinical Experience with Antabuse®, read before the American Psychiatric Association, Detroit, May 4, 1950. Osinski, W.; Childs, G. P.; Goldstein, K., and Bennett, R. E.: Therapeutic Results and Clinical Manifestations Following the Use of Antabuse®, read before the American Psychiatric Association, Detroit, May 4, 1950.

ethylthiuramdisulfide therapy will enable us (1) to make some observation concerning the psychologic implications of tetraethylthiuramdisulfide to the alcoholic, (2) to improve our therapeutic tools to be used concurrently with tetraethylthiuramdisulfide therapy, (3) to make a wiser selection of patients and (4) to improve the over-all approach to the problem of chronic alcoholism, with fewer patients falling into the group who have relapses.

CLINICAL OBSERVATIONS

Psychologic Effect of Tetraethylthiuramdisulfide.—In the course of getting the patient started on treatment with tetraethylthiuramdisulfide, it is customary to give him several controlled alcohol-tetraethylthiuramdisulfide reactions in the hospital situation to allow him to become familiar with this reaction and to aid us in adjusting the proper dose. During this time, the patient experiences a situation not too different from the conditioned reflex therapy of alcoholism. In some instances this conditioning may be very marked. We have had several patients who experienced the subjective symptoms of a tetraethylthiuramdisulfide-alcohol reaction after smelling the cork, and another patient who became uncomfortable at the sight of particularly realistic billboard advertising. This conditioning effect, whether present to a greater or less degree, does not last long. None of our patients have been uncomfortable in situations where others were drinking or have experienced other than the biochemical phenomenon of the tetraethylthiuramdisulfide-alcohol reaction after a period of one month following the test trials.

In some measure, the taking of tetraethylthiuramdisulfide has symbolic significance to the patient. The taking of a white tablet each morning is evidence to the patient that he is sick, that he has sought help and that he is taking something for his sickness. This allows him to live more comfortably with himself and abolishes the rejective attitude that his marital partner, family or friends may have toward him. Thus, the significance of taking medicine, which is symbolic of illness, has its influence on the patient's acquaintances, as well as on himself.

Closely akin to this aspect of taking tetraethylthiuramdisulfide is its utilitarian value. It saves the patient many excuses when he is confronted by his drinking pals. In cases in which both the husband and the wife drink, it allows one partner to cease drinking with an adequate explanation. In this case the explanation that the patient can no longer drink is largely implicit and need not be verbalized. One who becomes ill as a consequence of drinking is not so often encouraged by others to drink. Illness is an acceptable excuse which needs no further explanation, and the alcoholic when confronted can say, "No, it makes me ill," much more easily than he can after he has received only intellectual insight.

Psychologic Effects of Alcohol Withdrawal.—Chronic alcoholism is a symptom manifestation of an underlying mental and personality disturbance. This personality disturbance may range from simple reactive alcoholism to the early stages of one of the major psychoses. In spite of this wide range, there are many aspects the various alcoholic patients have in common. In other words, it appears that the psychopathology behind the symptom formation of alcoholism is similar from patient to patient and from one diagnostic group to another. With our series, although small and representing a short experience, we have been able to detect some correlation between the diagnostic group and the psychologic effects one sees in the patient after he has been placed under treatment with tetraethylthiuramdisulfide. (The criterion for our diagnostic groups is discussed in the section on "Prognostic Implications.")

We have noted the following effects of alcohol withdrawal in the patient after tetraethylthiuramdisulfide therapy:

1. Hypochondriacal reaction. This is most pronounced in the early months after the initiation of tetraethylthiuramdisulfide therapy and appears to be the way the patient handles his feelings of inadequacy and futility. These feelings may have a large real component in that the patient is frequently "scraping the bottom" by the time he is committed to us for treatment. His being sick allows the alcoholic to continue his dependent position. We can sometimes get a hint of the probability of such a reaction by the expression of a hypochondriacal content in the Rorschach test. It may be difficult to determine what part of the complaint is hypochondriacal and what part is due to the side reaction of tetraethylthiuramdisulfide (metallic taste in mouth, lassitude, constipation).

2. Hostility. The patient, during the course of his hospitalization or shortly thereafter, or several months later, may express a considerable amount of hostility toward the physician, the hospital and the family. In addition to that hostility, usually seen in regard to the commitment to the hospital, one finds after discharge that the patient complains about all sorts of little things, both at home and during the course of his follow-up visits. The hostile patient may attempt to "drink through" the tetraethylthiuramdisulfide-alcohol reaction or may try to show his prowess by drinking even though he is taking the drug. It is these patients who wind up in the emergency room of the local hospital extremely sick, moribund, or even dead. In those whom we have talked to after they have recovered from such a reaction, it is hard to tell whether the hostility really had a focus, and we guess that much of it had been turned inward. These patients may show depressive trends clinically and in the Rorschach test.

3. Anxiety. An increase in the observable anxiety of the patient is not often present. It may be present in some patients with essential alcoholism who had begun to gain intellectual and emotional insight. When present, this anxiety can often be used to psychotherapeutic benefit and may be pressing enough for the patient to see relief in formal psychotherapeutic sessions. Such patients, it appears to date, have good durable remissions. It is, however, those patients with an underlying psychotic process who most frequently show anxiety after what amounts to the forcible withdrawal of alcohol by the use of tetraethylthiuramdisulfide.

4. Other habituations. A few patients have turned to use of barbiturates, and one turned to amphetamine habituation. Those who turn to other habituations seem to have a more serious mental disturbance than does the usual alcoholic. One patient was schizophrenic and ambulatory, and two showed a character neurosis.

5. Crusadism. By this we mean that some alcoholics on tetraethylthiuramdisulfide therapy will go out and "preach" to their friends and other alcoholics that they have found the answer, that they have been cured of their alcoholism—"if you do the same as I, you will be cured also." It seems that as long as the patient keeps up this crusade against alcoholism and the belief that he is now able to help himself, he stays sober. These patients make good members of Alcoholics Anonymous and are encouraged to join.

6. Uneventful adjustment. This represents the largest group, and more careful analysis may succeed in subdividing it. In many of our cases subsequent changes in the life patterns resulting from withdrawal of alcohol are quietly handled by the patient himself, and this handling is frequently very successful.

Chart 1 gives a diagrammatic tabulation of the number of patients showing the various psychologic reactions while receiving tetraethylthiuramdisulfide which we have noted above. These effects are not mutually exclusive, though they are generally so. The patients with anxiety may show hostility and vice versa. However, the other withdrawal effects do not frequently appear in the same patient.

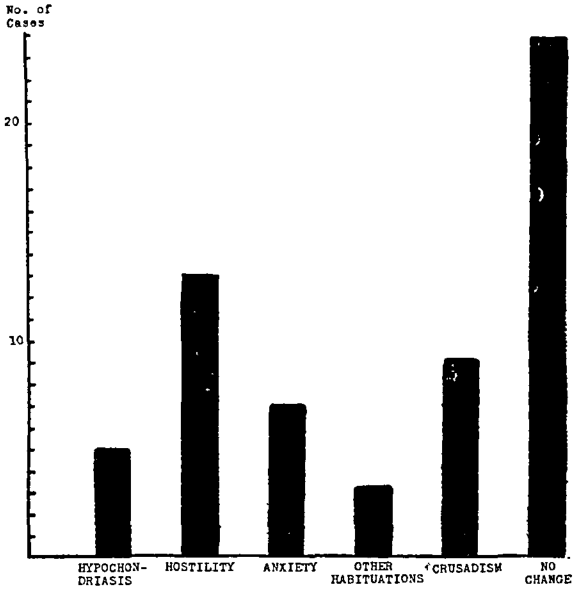

Chart 1.—Frequency of appearance of the various withdrawal reactions.

Use of Other Therapeutic Measures.—Psychotherapy: In the course of follow-up visits it is important to determine whether or not the patient would benefit by formalized psychotherapy. In the presence of anxiety the patient may sometimes ask for treatment on his own accord, but more frequently it is necessary to recommend such treatment as valuable. In the case of the hostile patient very careful handling is required, and it may be advisable to reduce the dose of tetraethylthiuramdisulfide to prevent severe alcohol-tetraethylthiuramdisulfide reactions. It is wise to watch carefully for depressive trends.

During the course of follow-up sessions, it is important not to perpetuate or to permit to become ingrained the hypochondriacal complaints that one frequently sees soon after the initiation of tetraethylthiuramdisulfide therapy. The side reactions of this drug must be watched for and controlled without arousing the drive to be ill that may be present in the patient.

Group therapy has been recommended, and it would seem to serve the same purpose and have the same meaning as group therapy among alcoholics who are not receiving tetraethylthiuramdisulfide.

At any rate, it appears that in a few cases the starting of treatment with tetraethylthiuramdisulfide may be an aid in keeping the patient working in therapy or in getting him initiated in therapy.

Environmental Alterations: An important aspect of tetraethylthiuramdisulfide therapy is handling the feelings of the marital partner or other members of the family. Up to this point, they have generally assumed either a punitive or an overprotective attitude toward the patient. These feelings can be handled by the physician in charge in a more or less direct explanatory manner, suggesting that with tetraethylthiuramdisulfide the patient will be able to take care of himself and that the responsibility of taking the drug should be left with the patient.

The social worker can be of great benefit in aiding the patient to gain employment, find friends and readjust his social life. As alcoholism is a symptom of precarious adjustment in life situations, some effort to improve the life situation may give the patient a wider margin of safety.

Those patients who on their own initiative express interest in the Alcoholics Anonymous group are encouraged to join, and the activities of this organization are supported by the physician in charge. We allow members of this group to see the patients in the ward, and we encourage their help in following the patients after they leave.

Prognostic Implications of Different Alcoholic Syndromes.—Many categories have been developed for the purpose of breaking into smaller units the large diagnostic catch basin of "chronic alcoholism." Unquestionably, chronic alcoholism is a symptom rather than a disease entity, and there may be a variety of underlying psychopathologies. For purposes of discussion, we have divided, although in some cases not without reservation, our cases into five diagnostic groups: (1) essential alcoholism, (2) reactive alcoholism, (3) periodic alcoholism, (4) character neurosis and (5) underlying major psychosis. This classification is probably no better and no worse than the other diagnostic groupings proposed to date. However, if it is understood what clinical entities have been placed in these various diagnostic groups, the point we wish to make about the prognostic implications will be clear.

The Rorschach test and the Thematic Apperception test, in addition to the clinical examination and history, are of great value in determining the personality structure of the individual alcoholic patient and enable one more accurately to classify the variety of personality disorders giving rise to the alcoholism.

1. Essential Alcoholism: By essential alcoholism we mean the alcoholism which stems from a character disorder as a result of oral frustrations and fixations, wherein alcoholism is the main expression of the neurosis.

Alcoholics of this type are the overly dependent, sensitive, insecure persons who are dominated by the parent or parental figure of the opposite sex. They seem to drink to satisfy their oral longings, to increase their convivialness, to lessen their sensitiveness and insecurity and to provide an outlet of hostility toward the domineering parental figure.

2. Reactive Alcoholism: Under reactive alcoholism we include those patients in whom, in spite of a personality structure similar to that of the essential alcoholic, the ego defenses are more adequate. These persons may show depressive features clinically and in the projective tests. They generally carry on very well, but as a result of particularly stressful situations, particularly situations of psychotraumatic importance, are apt to regress to alcoholism.

3. Periodic Alcoholism: We mean here a distinct diagnostic type, not a term descriptive of the drinking habits of the patient. Persons with periodic alcoholism bear a close relation to the manic-depressive—cyclothymic—patients, both in the expression of their illness and in their personality background. They are the overly conscientious, rigid, compulsive persons with a strong superego and subconscious guilt. Their drinking represents either a manic or a depressive episode and allows temporary relief from the overly strict superego and a satisfaction of the guilt feelings through the self-punishment that drinking entails.

4. Character Neurosis: By character neurosis we do not mean the usual degree of psychopathy with complete lack of primary identifications and warmth in interpersonal relations, although persons of this character may be admitted to the hospital with the diagnosis of chronic alcoholism; rather, we mean that condition in which, in the course of the patient's development, the parent of the same sex is psychologically absent and the parent of the opposite sex too much present, resulting in faulty superego development. Not infrequently in the case of the male alcoholic, we find that his father was an alcoholic, and thus absent as an identification figure, or that he was an overly strict, righteous person, making identification difficult. The clinical picture of these patients is characterized by complete lack of responsibility in everyday living, a superficial friendliness which is lost as soon as the narcissistic gratifications are no longer accomplished. Members of this group may have reactions to alcoholism similar to drug addiction. These patients have poor ego strengths and use alcoholism for immediate gratification. They are unable to curb their instinctual impulses in prospect of future gains and satisfactions.

5. Underlying Major Psychosis: Alcohol may be the last support a person with a potential psychosis holds onto. Alcoholism may be a symptom of an underlying schizophrenic process, wherein, at the bar with drinking friends, alcohol dissolves the superego and the patient is able to hang on longer to the real world. Certainly, alcoholism is a common symptom in all the major psychoses, including schizophrenia, manic-depressive psychosis and organic deterioration.

Chart 2 summarizes the number of relapses as compared with the number of present remissions in the different diagnostic groups. Almost as one would expect, reactive alcoholism has the least number of relapses. It is interesting to note that patients falling in the group with essential alcoholism have done fairly well, while the patients with a character neurosis and particularly those with an underlying major psychosis have done poorly. Thus, it appears that in the treatment of reactive alcoholism, tetraethylthiuramdisulfide offers a temporary supportive measure, which ordinary treatment in the hospital situation would probably have accomplished anyway. It offers little to those with an underlying major psychosis. The patient with a character neurosis will usually not continue to take the drug long after leaving the hospital, and may try to drink through the tetraethylthiuramdisulfide-alcohol reaction or will discontinue the use of tetraethylthiuramdisulfide under stress situations and resume drinking. The personality disorder in the patient with periodic alcoholism appears to need direct attack through psychotherapy.

Of the patients with essential alcoholism, a fairly large number seem to be without relapse and a comparatively small number fail to improve. It appears that in persons with this personality structure the symbolic significance of tetraethylthiuramdisulfide achieves its major importance. These are the patients who may react to the withdrawal of alcoholism with hypochondriacal states, anxiety and crusadism. It is also the patient with essential alcoholism who seems to gain the most benefit from the psychotherapeutic handling of his hostility and anxiety, from entrance into group therapy and from help in his environmental status. We are dealing here with short term failures, and we would not hazard a guess as to the long term results. However, it appears that the patient, the family and the patient's employers frequently express considerable satisfaction with what has been accomplished, especially in patients who have had repeated and frequent hospital admissions and severe drinking bouts over the preceding years. We feel that tetraethylthiuramdisulfide is a valuable adjunct to existing therapies of chronic alcoholism. The experience so far gained will give us a rationale for the selection of patients.

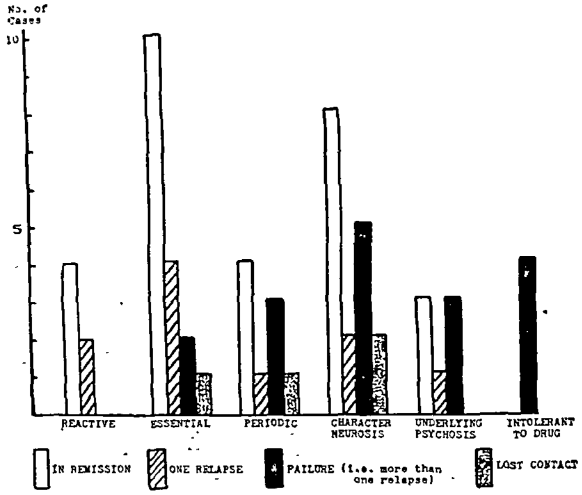

Chart 2.—Number of remissions and relapses in the various diagnostic groups.

Of the 60 patients, 29 had remissions; 10 had one relapse; for 17 treatment failed and with 4 we lost contact.

Four patients were intolerant to the drug, either because of an allergic reaction [6] (dermatitis) or, in one instance, failure to become sensitized.

CONCLUSIONS

1. Tetraethylthiuramdisulfide (antabuse®) has psychologic, as well as biochemical, actions. The psychologic action is seen not only in some degree of psychologic conditioning of the patient, but in its symbolic significance and utilitarian values to the patient.

2. What amounts to the forceful withdrawal of alcohol by use of tetraethylthiuramdisulfide may result in hypochondriacal states, in increased hostility, either objectively directed or introjected, in anxiety, in other habituations, in "crusadism" or in no apparent personality changes, depending upon the personality structure of the alcoholic patient.

3. The administration of tetraethylthiuramdisulfide should be accompanied with other therapeutic measures, particularly psychotherapy, so as to avoid perpetuating the hypochondriacal state, to handle the resulting hostility and anxiety and to insure some measure of insight therapy. Environmental alterations through the social service worker are of particular value.

4. It appears that patients in the two groups—reactive alcoholism and essential alcoholism—do well under tetraethylthiuramdisulfide therapy, while the patient with a character neurosis, the patient with periodic alcoholism and the patient with alcoholism as a symptom of an underlying major psychosis do poorly. It is probable that the patient with reactive alcoholism might have recovered with only the usual management. The patient with periodic alcoholism needs psychotherapy directed toward the basic personality disturbance rather than toward the alcoholism. Tetraethylthiuramdisulfide seems to find its greatest place in that largest of all diagnostic groups, the patients wtih essential alcoholism. The number of relapses in this group, as compared with the number of patients who are sober to date, is small. Tetraethylthiuramdisulfide treatment of the patient with essential alcoholism puts less strain on existing medical facilities than did former approaches and appears to be equally as, or more, successful.

ABSTRACT OF DISCUSSION

Dr. David A. Boyd, Rochester, Minn.: Excessive alcoholic intake is only a symptom of a severe underlying personality disturbance, and the obvious presenting symptom must not be confused with the deeper psychopathology, which varies from case to case. Treatment of alcoholic patients by the use of antabuse® represents a new kind of aversion therapy, and this general type of treatment of problem drinkers has an ancient history. In medieval times an attempt was made to sicken the drinker of his taste for alcoholic beverages by saturating all his food and fluids with wine, with the hope that he would become more than satiated and disgusted with the taste of drink. More recent efforts have employed the technique of the conditioned reflex, in which the drinker is trained to become physically ill with the intake of some specific kind of alcoholic beverage. The present treatment differs, in that it adds a physiologic intolerance to alcohol to the psychologic conditioned reflex, and the reaction is directed toward any type of alcoholic beverage. As a type of aversion therapy, it has all of the benefits of previous similar treatments, but also all of the weaknesses. As outlined by the authors, excessive alcoholic indulgence is a symptom, and not the complete syndrome. Thus, it is highly unlikely that tetraethylthiuramdisulfide therapy, so long as it is directed solely against symptom removal, can solve the problem of alcoholism. In psychiatry, therapy usually fails when it is directed only toward the presenting difficulty and leaves untouched the more basic problem of personality disharmony.

It is likely that tetraethylthiuramdisulfide therapy will have all of the difficulties experienced in other types of treatment of the alcoholic patient. The motivation of the patient in undertaking therapy will be one of the important deciding factors, either for or against success. It has long been recognized that the patient who is brought under duress for treatment, or undertakes it only by reason of threats of desertion or punishment, is usually not a candidate for successful therapy. The motivation for therapy will depend on the underlying personality problem and the need the patient has for alcoholism as a defense against his underlying emotional conflicts. These considerations emphasize a basic problem in the therapy of the alcoholic patient. His pattern of alcoholism may be serving as an important defense mechanism, or even as the presenting symptom of a severe underlying neurosis or psychosis. The obliteration of the presenting symptom by aversion therapy may leave the patient stripped of his defenses, and bring about a frank neurotic or psychotic break, as the former avenue of escape into alcoholism is blocked. Therefore, it is to be expected that severe neurotic and psychotic disturbances will occur as the alcoholic habit is successfully controlled by treatment, and the authors are wise in advocating continued supervision and supportive psychotherapeutic procedures. It is quite likely that tetraethylthiuramdisulfide will eventually prove to be a valuable adjunct to the therapy of alcoholism, but it certainly will not represent a cure-all. Neither is it a blanket method of therapy, which can be applied uncritically to any patient who presents the symptom of excessive alcohol intake. In the light of present knowledge, therapy directed toward a single symptom cannot replace a broad treatment program of the total problem of the specific problem drinker.

Dr. Kenneth E. Appel, Philadelphia: Drs. Dale and Ebaugh's correlation of types of alcoholism, with therapeutic results, is most enlightening. This paper should be a great help to practitioners and should stand as a caution to many who are likely to seize on this drug as a mechanical cure-all of alcoholism. We have had some difficulty in following the authors' separation of the group with essential alcoholism from those with the character neurosis. No doubt there is overlapping. The greater number of failures in the latter group indicates they have been able to separate these two groups. It appears that the group with essential alcoholism has simpler dependence and the group with character neurosis has more unconscious conflict over homosexual identifications and tendencies and greater repressed hostility. It would be helpful for the authors to elaborate the characteristics of these two groups. Their warning that alcohol may be the last support and defense against a psychotic process is important. The avoidance of alcohol, as a result of tetraethylthiuramdisulfide treatment, may release a psychotic depression which may eventuate in suicide, as has happened. The drug is not a cure-all, a specific. There are medical contraindications to its use.

Psychologically, the use of tetraethylthiuramdisulfide involves seven functions: 1. It is a daily, repeated indication, in the (ritual) taking of the pill, that the patient is sick, accepts this fact, faces it and is willing to do something about this reality situation. 2. It is a symbol of authority. 3. It stands as a threat of punishment and suffering. In these respects it reinforces the ego ideals and superego of the patient. 4. It preserves the dependent needs of the patient, in the authoritative relationship with the doctor, with his direction, guidance and support. 5. For the patient, with his weakened ego, it is a substitution of reality support from the doctor for his alcoholism. 6. The use of tetraethylthiuramdisulfide has a relation, also, to the psychology of magic, in dealing with insecurity, wish fulfilment and fear. 7. Successful treatment involves, ultimately, the incorporation of this security obtained from the doctor into oneself, so that the patient can carry on, on his own, without dependence on the drug and the supervising relationship of the physician.

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[6] 6. Lewis, H. M., and Bremers, H. H.: Fixed Drug Eruption from Tetraethylthiuram Disulfide (Antabuse), J. A. M. A. 142: 1141 (April 15) 1950.

Thus, tetraethylthiuramdisulfide is not merely a medical cure for alcoholism; it involves complex psychologic mechanisms. It points to the need of simultaneous and further psychologic treatment to strengthen the personality of the patient, who has made a start in the reorganization of his personality forces by the use of antabuse.® General practitioners who use this method of treatment should bear in mind these psychologic factors which are important in its use; otherwise, a good start in the treatment of the extremely difficult problem of alcoholism is in danger of being rendered ineffective.

Dr. Franklin G. Ebaugh, Denver: The main motivation in the presentation of our paper was to point out that antabuse® therapy creates psychological reactions to the physiological *inability to drink*, and, second, that certain groups of alcoholics, depending on the personality structure or diagnostic category, do not do well. This information, we hope, will be useful in the selection of patients for this type of therapy. I appreciate the splendid discussion by Appel and Dr. Boyd. We are in complete agreement with the content of their discussion. We have been fortunate, perhaps, because our group is small and has been carefully screened. In Colorado, there are several groups of Alcoholics Anonymous; the only one which has been enthusiastic and has cooperated with us has been the Denver group. The main reason that they have cooperated with us has been that we invite the officials to take part in our regular group therapy sessions for alcoholism.

TREATMENT OF ALLERGIC DISEASE OF THE BRONCHI

Ben F. Feingold, M.D., San Francisco

On the basis of allergic tissue changes one can interpret the factors responsible for the signs and symptoms of allergic bronchial disease and evaluate the various therapeutic measures available for their control. In the pathology of allergic diseases two types of tissue changes are observed: (1) the reversible and (2) the irreversible.

REVERSIBLE TISSUE CHANGES

The reversible tissue changes, which are induced by such antigens as pollens, epidermals, foods, serums and drugs, are characterized by edema, smooth muscle spasm and stimulation of glands. Only the conducting portion of the lungs or bronchial tree is affected by the reversible tissue changes that account for the signs and symptoms of bronchial allergic disease.[1]

Edema of the peribronchial tissues produces rigidity of the bronchial tree that interferes with the normal expansile and contractile movements of these structures,[2] while swelling of the mucosa encroaches on the lumens, which are also narrowed by smooth muscle spasm. These factors, combined with the increased production of mucus resulting from stimulation of glands, create varying degrees of obstruction, which is the basic disturbance in bronchial allergic disease.

Bronchial asthma and those conditions that are frequently termed "allergic bronchitis" and "asthmatic bronchitis" are fundamentally variations of allergic disease of the bronchi provoked by such allergens as pollens, epidermals and foods. In each instance the tissue changes are identical, but variations in the degree of reaction explain the differences in the clinical picture. Obstruction is the dominant feature in every case, while the degree of obstruction determines the signs and symptoms in each clinical pattern.

The term "asthma," in the dictionary interpretation, means labored respiration. So, actually, in the literal sense, one should apply the term "bronchial asthma" to all allergic bronchial disease associated with any degree of impaired breathing. However, through usage the term "bronchial asthma" has become identified with a specific clinical picture characterized by paroxysmal attacks of dyspnea due to bronchial allergic disease.

The failure to recognize that the clinical pictures so frequently labeled "allergic bronchitis" and "asthmatic bronchitis" are variations of bronchial asthma may result in mismanagement in treatment. These terms have been applied interchangeably to conditions of those children offering a history of frequent "colds," with recurrent or persistent cough accompanied with the lung findings of rhonchi, coarse rales and usually a variable degree of wheezing but only slight or no respiratory embarrassment. The temperature is normal or moderately elevated, except in those diseases ushered in by an acute upper respiratory tract infection, when there may be an elevation—often as high as 103 to 104 F. The term "bronchitis," which means inflammation of the bronchi, implies that the factor of infection plays a causative role in the tissue changes and misleads the clinician from the realization that these children are experiencing an expression of allergic disease of the bronchi due to such commonly recognized allergens as pollens, environmental factors and foods, while infection contributes only secondarily.

It would be advisable to delete from the literature the terms "allergic bronchitis" and "asthmatic bronchitis" and to substitute the name "bronchial allergic disease," which more accurately connotes the causative factors and the mechanism.

If allergic disease of the bronchi is caused by such allergens as pollens, epidermals and foods, the first step toward definitive control of this disease is to determine the specific factors concerned. This is accomplished by taking a thorough, complete and accurate history dating back to the initial onset of any signs or symptoms of an allergic nature. The relation of the ailment to all possible environmental influences should be elicited; any seasonal variation of the complaint should be determined and the influence of various food items accurately estimated but not overemphasized. Foods may be important agents in the production of allergic disease of the bronchi, but they do not deserve the emphasis they have received in the literature of the past, particularly at the expense of the more important inhalant factors. A complete history is

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From the Department of Allergy of Childrens Hospital, Los Angeles, and the George Piness, M.D., Allergy Group.

Read in a Joint Meeting of the Sections on General Practice and Pediatrics at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 30, 1950.

[1] Feingold, B. F.: Respiratory Allergy in Children: Round Table Discussion, American Academy of Pediatrics, San Francisco, Nov. 16, 1949.

[2] Warren, S., and Dixon, F. J.: Antigen Tracer Studies and Histologic Observations in Anaphylactic Shock in the Guinea Pig. Part I, Am. J. M. Sc. **216**:136 (Aug.) 1948. Dixon, F. J., and Warren, S.: Antigen Tracer Studies and Histologic Observations in Anaphylactic Shock in the Guinea Pig. Part II, ibid. **219**:414 (April) 1950.

complemented with skin testing, results of which must correlate wtih the facts of the anamnesis to be of value. Skin testing that does not support the details of the history is of no value. The offending factors that have been determined should be eliminated from the diet and the environment, and in those cases in which adequate environmental control cannot be effected, as frequently occurs in the presence of pollen and epidermal agents, desensitization with a specific antigen should be instituted.

If obstruction is the cause of the signs and symptoms of allergic disease of the bronchi, the basic principle for palliative therapy should be relief of the obstruction. This is accomplished by those procedures and drugs that relieve edema, relax bronchospasm and facilitate the liquefaction and absorption of mucus.

RELIEF OF EDEMA AND BRONCHOSPASM

Sympathomimetic Drugs.—Of the various sympathomimetic drugs recommended for the treatment of allergic disease of the bronchi, only epinephrine, ephedrine and phenylpropanolamine (propadrine®) have a vasoconstrictor action in addition to their ability to relax bronchospasm.[3] Since edema of the peribronchial tissues and the mucosal lining of the bronchi contributes appreciably toward the production of obstruction, with the resulting symptoms, it is desirable that the medication employed should influence this phase of the pathological picture.

Such drugs as isopropylarterenol (isuprel®),[4] isopropyl-epinephrine (aludrine®) and orthoxine,[5] which exhibit a strong bronchodilator effect but no vasoconstrictor action, cannot influence the edema of allergic bronchial disease. Isopropyl-epinephrine actually produces vasodilatation which could predispose one to an aggravation of edema with its resulting influence upon symptoms.

Of the sympathomimetic drugs, epinephrine has the rapidest and strongest bronchodilator and vasoconstrictor actions, but because of the comparatively brief duration of its effect the usefulness of epinephrine is limited to the acute asthmatic episode. It is important to administer the drug in adequate dosage, 0.3 cc. to 0.5 cc. subcutaneously, in order to obtain the full benefit of its vasoconstrictor and bronchodilator actions and also in order to avoid the vasodilatation that is manifested following the administration of small doses. Epinephrine can be repeated in rapidly successive doses without loss of effectiveness.

Ephedrine: Ephedrine hydrochloride or sulfate is employed to prevent the occurrence of acute episodes and to treat mild attacks of allergic bronchial disease. It is administered by mouth in doses of ⅛ grain (8 mg.) to children 1 year of age and under and in doses of ¼ grain (15 mg.) to older children. The drug should not be repeated too rapidly, as the effects of ephedrine diminish with each successive dose. Ephedrine, through stimulation of the higher centers, may produce the unpleasant side effects of jitteriness, nervousness and wakefulness. These can be counteracted by combining the drug with small doses, ⅛ grain (8 mg.) to ¼ grain (15 mg.) of phenobarbital. The barbiturates, because of their depressing action on the respiratory center, should not be used alone.

Phenylpropanolamine: This drug exhibits both vasoconstrictor and bronchodilator actions without stimulation of the higher centers. When ephedrine is not tolerated propadrine may be substituted.[3]

The Antihistaminic Drugs: The drugs of this group are reported to have both vasoconstrictor and bronchodilator functions. Despite these actions most clinicians have had disappointing experiences with the antihistamines in the treatment of allergic bronchial disease, including bronchial asthma. Owing to their mildly atropine-like effect the antihistamines may aggravate the picture of allergic bronchial disease by drying secretions.

The Xanthine Drugs: The drugs of this group, alkaloidal caffeine, theophylline and aminophylline, have of recent years enjoyed popular use in the treatment of allergic bronchial diseases. They owe their effectiveness to their bronchodilator action. Although the xanthines do exhibit a vasoconstrictor effect, in therapeutic doses the peripheral vasodilator action predominates. This action may aggravate edema. Theophylline is commonly combined with ephedrine and phenobarbital as an antiasthmatic for the mild attack. Theophylline ethylenediamine, or aminophylline, is administered orally in doses of 1½ grains (0.1 Gm.) or by suppository (0.3 Gm.). It can also be given intravenously for the acutely asthmatic patients, especially when they are refractory to epinephrine (adrenalin®).

Regardless of the route of administration, any xanthine drug may produce gastric irritation with the symptoms of nausea and vomiting. I have observed frank gastric bleeding after the administration of a single aminophylline suppository.

RELIEF OF MUCUS

To combat the ill effects of mucus in the bronchi in allergic disease, the most valuable measure is hydration of the patient. The importance of forcing large quantities of liquids cannot be overemphasized, yet the value of this simple measure has not been stressed adequately in the literature. Water is the best of all expectorants. In the absence of an adequate fluid intake none of the medicinal expectorants is effective. Hydration produces liquefaction of mucus and prevents inspissation and thickening that lead to plugging and obstruction of the bronchi, with a persistence or even an aggravation of symptoms.

It may seem paradoxical to emphasize the importance of giving large quantities of fluids—1,000 or even 2,000 cc. in 24 hours—in a disease in which tissue edema plays such an important role in the production of symptoms, but clinical experience has consistently demonstrated, frequently with dramatic response within a matter of hours, the benefit of such therapy. When persistent vomiting occurs or when children with allergic bronchial disease do not respond to fluids by mouth, 5 per cent dextrose in plain water should be administered. Of the various expectorant drugs available, saturated solution of potassium iodide is the most effective. This can be administered in doses of 5 to 10 grains (0.30 Gm. to 0.60 Gm.) three times daily, depending on the age of the child. Diluted hydriodic acid syrup and ammonium chloride are less effective than potassium iodide as expectorants. The opiates and the sedative cough mixtures are contraindicated in all forms of allergic bronchial disease. Their suppression of the respiratory center, the dulling of the cough reflex and the drying of secretions may lead to plugging of the bronchi, with an aggravation of symptoms.

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[3] Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, The Macmillan Company, 1946, p. 396.

[4] Krasno, L. R.; Grossman, M., and Ivy, A. C.: Inhalation of Norisodrine Sulfate Dust, Science **108**: 476, 1948; The Inhalation of Norisodrine Sulfate Dust, J. Allergy **20**: 111 (March) 1949. Segal, M. S., and Beakey, J. F.: Management of Bronchial Asthma, Ann. Allergy **5**: 317 (July-Aug.) 1947. Gay, L. N., and Long, J. W.: Clinical Evaluation of Isopropyl Epinephrine in Management of Bronchial Asthma, J. A. M. A. **139**: 452 (Feb. 12) 1949. Gilman, A.: The Pharmacology of Drugs Used in Allergic Conditions, J. Allergy **19**: 281 (Sept.) 1948.

[5] Graham, B. E., and Cartland, G. F.: Some Comparative Pharmacological Actions of Beta-Hydroxy and Methoxy Phenyl-n-Propylamines, J. Pharmacol. & Exper. Therap. **81**: 360 (Aug.) 1944. Graham, B. E., and Kuizenga, M. H.: A Pharmacologic Study of Ortho-Methoxy-Beta-Phenylisopropyl Methylamine Hydrochloride, and Thirteen Related Methoxy Analogues, J. Pharmacol. & Exper. Therap. **94**: 150 (Oct.) 1948.

IRREVERSIBLE TISSUE CHANGES

The irreversible, or fixed, tissue changes, which are induced by such antigens as bacteria, bacterial products, serums and drugs, are identified with death of cells and vascular damage. In the lungs such tissue alterations affect the respiratory portion of these organs, which includes the parenchyma, the alveolar ducts and the terminal bronchioles.[1] Alteration of these structures by irreversible tissue changes explains the pulmonary involvement observed in periarteritis nodosa, rheumatic disease and recurrent or malignant Löffler's syndrome.

A history of either bronchial asthma or of respiratory difficulty of a lesser degree with rhonchi, coarse rales and wheezes in the lungs, accompanied with an upper respiratory tract infection has been responsible in great measure for such terms as "asthmatic bronchitis," "allergic bronchitis" or "bacterial asthma." The implication in each instance is that bacteria or bacterial products are the causative agents for the allergic state. This impression results from the failure to recognize that infection plays a dual role in allergic disease.[6] First, infection may produce tissue hypersensitivity with irreversible tissue changes characterized by death of cells and vascular damage. In the lungs such tissue changes are limited to the respiratory portion of these organs and cannot explain the symptomatology of allergic bronchial disease, including bronchial asthma. Second, infection may influence the course of existing allergic disease due to such antigens as pollens, epidermals and foods, which produce reversible tissue changes that involve the bronchial tree and account for the signs and symptoms of allergic bronchial disease, including bronchial asthma.

When infection does influence the course of existing allergic disease, it produces a distinct pattern for the infection. The pattern is one of two types, depending on the nature of the infection. The first pattern is observed in association with pertussis and the viral diseases. During the period of invasion of these diseases there is an aggravation of the allergy. As these diseases approach their climax, the symptoms of allergy decrease in severity so that, at the fastigium, the allergy is suppressed. With convalescence there is a recrudescence of the allergy. The second pattern is observed in bacterial infections of the upper respiratory tract, including nasopharyngitis, tonsillitis, adenitis, sinusitis and also otitis media. In these diseases the symptoms of allergy are aggravated at the peak of the infection. As the infection improves, the symptoms of allergy improve. The aggravation of the symptoms of allergy and their improvement as the acute infection subsides have led to the belief that infection is the cause of the underlying allergic disease. But the coexistence of infection and allergic disease of the bronchi should not be interpreted as bacterial allergy. Infection is only an influencing agent and not the cause of the bronchial allergy disease.

The recognition of the role of infection is important in the management of allergic disease of the bronchi. For the child with a history of recurrent pulmonary symptoms of allergic disease accompanied with an upper respiratory tract infection, definitive therapy is achieved by controlling the food, epidermal and pollen factors that cause the allergic disease. This is accomplished by elimination of the offending agents and by specific desensitization for the pollen and epidermal agents when indicated. Vaccines, either stock or autogenous, are of no value in the management of these cases. Through successful control of the allergic state, these children may suffer an upper respiratory tract infection but without the pulmonary manifestations of allergy. Furthermore, adequate control of the allergy decreases the frequency of such infections or prevents their occurrence entirely.

For control of the acute symptoms in this syndrome, therapy in the form of the sulfonamides or of the antibiotics is directed against the infection. As the infection improves, the symptoms of allergic disease also improve.

COMPLICATIONS OF ALLERGIC BRONCHIAL DISEASE

Dehydration is the most important predisposing factor in the production of the complications of allergic disease of the bronchi. In dehydration plugs are formed by the thick, dry, tenacious secretions that may completely obstruct the air passages, resulting in the atelectatic areas responsible for the syndrome described as allergic bronchopneumonia.

The most valuable prophylactic measures against bronchial plugging are an adequate fluid intake and iodides—the latter preferably in the form of saturated solution of potassium iodide. When complete obstruction of a bronchus does occur the early administration of epinephrine hydrochloride 1: 1000 hypodermically and of intravenous water with 5 per cent dextrose are the most valuable measures to effect release of mucus plugs. Occasionally, vomiting induced by syrup of ipecac may be effective in expelling plugs from the bronchi. Failure to relieve the obstruction results in pneumonitis from superimposed infection. With pneumonitis, specific therapy in the form of antibiotics must be directed against the infection.

Status asthmaticus, or persistent asthma that fails to respond to the usual management for this disease, is not commonly observed in childhood. When it does occur it is usually due to dehydration, resulting either from an inadequate fluid intake or from the dehydration rapidly induced by infection in childhood. In most instances, an immediate response will be observed following the intravenous administration of 5 per cent dextrose in plain water. When epinephrine is ineffective, after intravenous therapy with dextrose 5 per cent and plain water, a good response to the drug will be observed.

For restlessness small doses of phenobarbital are indicated. In some cases 10 grains (0.6 Gm.) of chloral hydrate in 2 fluidounces (60 cc.) of water as a retention enema is an effective sedative.

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[6] Feingold, B. F.: The Influence of Acute Infection Upon the Course of Allergy in Children, J. Pediat. 34:545 (May) 1949; Infection in Allergy, to be published.

Cyanosis.—The presence of cyanosis in allergic bronchial disease indicates either atelectasis or infection or both. The same basic principles of therapy are applicable —adequate hydration, expectorants in the form of iodides and specific therapy for infection. For cyanosis and labored respiration, oxygen therapy is indicated.

Fever.—Low grade fever, with temperatures between 100 and 101 F., is commonly observed in uncomplicated allergic bronchial disease. High fever that ushers in an attack of allergic bronchial disease usually indicates the presence of infection as a precipitating agent, while sudden temperature as high as 104 to 106 F., occurring during the course of allergic bronchial disease or bronchial asthma, suggests the complication of allergic bronchopneumonia.

SUMMARY

Involvement of the bronchial tree by reversible tissue changes induced by such antigens as, pollens, epidermals and foods explains the signs and symptoms of allergic bronchial disease, including bronchial asthma.

Bacteria and bacterial products induce irreversible tissue alterations that affect the respiratory portion of the lungs: the parenchyma, alveolar ducts and respiratory bronchioles. Such alterations explain the signs and symptoms of rheumatic pneumonitis, the pulmonary involvement of periarteritis nodosa and chronic Löffler's syndrome.

Definitive treatment for allergic bronchial disease is achieved by controlling the pollen, epidermal and food factors that may be responsible agents and by specific desensitization when indicated.

Palliative treatment for allergic bronchial disease consists in the relief of obstruction by those procedures and drugs that relieve edema, relax bronchospasm and facilitate the liquefaction and absorption of mucus.

The role of infection as an influencing agent in allergic bronchial disease is pointed out.

Therapy of the common complications of allergic bronchial disease is indicated.

Permanente Foundation Hospitals, 515 Market St.

ABSTRACT OF DISCUSSION

Dr. Ralph Bowen, Houston, Texas: I should like to add a note of optimism. Fifty per cent of these children lose their major allergies during the adolescent period. However, it behooves us to do everything possible, since when these children are first seen, no one knows whether the child is a candidate for trouble up to adolescence or if his symptoms may persist. These children in the majority of cases will become true bronchial asthmatic patients during their preschool years. In regard to infection and its role in allergy: when children in my care have a temperature of 103 or 104 F. and are coughing, sneezing and wheezing, I am sure these symptoms are not due to pollens, environmental factors and foods. These children are in distress because of bacterial, viral or meteorologic factors. Moreover, they do not follow the pattern outlined by Dr. Feingold in that, when they have upper respiratory tract infections, the symptoms of allergy are not necessarily aggravated at the peak of the infection, and that as the infection improves the symptoms of allergy in my patients often do not improve. Oftener, my patients will have an acute tonsillitis, otitis media with fever and leukocytosis, and about the time the tonsils or ears are normal and the child is afebrile the bronchial symptoms develop and may persist for weeks in spite of anything except a change of weather. In two families who have three children all under 8 years of age all three are asthmatic. Usually these children can eat practically all foods during the summer, but let winter come, and in spite of elimination diets and hyposensitization, the eldest child usually brings home a cold and the rest go over like a set of dominoes. I appreciate the importance of food allergy, but I have not been able to withdraw specific foods and prevent infection or to influence the shrinkage of tonsillar tissue as has been reported. In a survey of 473 asthmatic children, it was found that 76 per cent had had their tonsils and adenoids removed before being referred. Of this group, 14 of the most challenging patients were selected, and an equal number were used as controls. The first group received 2 to 4 cc. of immune serum globulin (human, venous type) every month for five months; also, 0.05 cc. intradermally each week. In the "globulin group" we had much less respiratory infection than in the controlled study. Dr. Harry S. Bernton, of Washington, D. C., has conducted this same procedure, and he, too, feels that it has helped a group of asthmatic children who had failed to respond to all other approaches. In all cases the routine management was continued with both groups. I agree with Dr. Feingold that vaccine therapy is primarily empirical and worthless and that skin testing with vaccines is contraindicated. We need better testing materials. The present inhalant group and other environmental offenders are confirmatory in high incidence, but the present food antigens are another story. In all good antigens there remain too many false positives. Certain foods have a tendency to give false positives. Beware of false positives and remove from your food-testing trays the antigen cottonseed, [illegible] it has been responsible for fatalities in some [illegible] has also been shown that a positive skin test [illegible] cottonseed does not justify the exclusion of cottonseed oil products, since such contain no protein. In many cases food rotation has been of benefit. I have observed that children who perspire excessively while asleep and some whose pupils are widely dilated tolerate drugs poorly because of an overactive nervous system. I rarely give more than 4 minims (0.25 cc.) of epinephrine, and I repeat this every 20 or 30 minutes till it has been given four times. I have found the inhalation units of 1:1,000 epinephrine to be useless in children under 6 years of age. They provoke too much drying of the throat. I agree with Dr. Feingold about the antihistamines. However, I have seen a few patients experience some benefit from them. In a recent poll 36 allergists preferred tripellenamine (pyribenzamine) hydrochloride or prophenpyridamine (trimeton) for day use and diphenhydramine (benadryl®) hydrochloride for night use. The present inclusion of ephedrine in treatment may also be of benefit to some. Morphine sulfate and meperidine (demerol®) hydrochloride are to be excluded. Theophylline ethylene diamine, or aminophylline, a most heralded drug on occasion, should always be given slowly and never subcutaneously because of the exquisite pain. In the case of two infants in whom the rectal suppositories were used, wakefulness and excitability resulted. If the suppository is not available, one can take a 10 cc. vial containing 3¾ grains (0.25 Gm.) of aminophylline and add 20 cc. of water, thus affording a "rectal cocktail." Dr. Feingold has rightly stressed fluids. He urges dextrose solution and not saline, since there is already sodium chloride retention. We have also encouraged the drinking of carbonated beverages. We prefer not to give antibiotics orally, since the incidence of urticaria has been higher by this route. Next year the literature will be full of reports on the use of pituitary adrenocorticotropic hormone (ACTH) and cortisone in the field of allergy. May I sound a warning that we still have to learn how to use them? Cushing's syndrome is an easy possibility. On one of our patients to whom pituitary adrenocorticotropic hormone was given for periarteritis nodosa, the necropsy revealed the adrenal gland to be nearly gone. We shall all agree that in chronic disease an emotional pattern is always to be considered. However, this does not explain "community asthma" or account for the fact that three children in the same family came down with asthma on the same night. A 3 months old infant is not wheezing because of maternal rejection. I congratulate Dr. Feingold on bringing this serious problem of allergy before our group. The families of these children should be discouraged from moving to other localities in the hope of changing the outlook, for bronchial allergic disease prevails everywhere.

Dr. Albert H. Rowe, Oakland, Calif.: I shall limit my discussion to the regularly recurring attacks of bronchial asthma usually initiated by nasal symptoms and at times associated with fever. The nasal symptoms, especially when fever is present, suggest to parents and physicians infection as the cause of the asthma. Usually, however, they are due to atopic allergy in the nasal tissue that, in a few hours or one or two days, descends into the lungs, causing allergic bronchitis or asthma. The probable explanation of the termination of the attack in two to six days is the exhaustion of the reacting bodies in the nasobronchial tissues; afterward the causative allergens can be eaten or inhaled for days or weeks until the reacting bodies reaccumulate up to the reacting threshold. If these reacting bodies are not entirely exhausted during the attack, then mild nasal or bronchial symptoms continue between the attacks. The regularity of recurrence of these attacks is due to the approximately equal time necessary for these reacting bodies to reaccumulate. Food allergy in our experience is the usual cause of such recurrent attacks; inhalant and infectant allergy are rare causes. The determination of food allergy usually necessitates diet trial for which our cereal-free elimination diet is most valuable. This diet is modified by exclusion of foods giving definite scratch reactions or of those that the patients definitely dislike or cannot tolerate. The importance of excluding all cereal grains along with milk, eggs and other frequently allergenic foods must be stressed. The time necessary for use of such diets varies with the frequency of attacks. Thus, if an attack occurs every three or four weeks, the diet must be continued until the symptoms are absent for two or, better, three times as long. After relief of the patient, indiv[illegible]ds can be added, excluding those that reproduce sym[illegible]

It is important to realize that inhalant allergy [illegible] food allergy. In many patients, however, food is [illegible] sole cause. Such extended diet trial requires strict adherence to the diet and the eating of enough prescribed foods to maintain weight and nutrition. With the detailed menus and recipes published with these diets this maintenance is readily accomplished. The fact that food allergy often is decreased in the summer explains the absence or decrease of attacks and symptoms from June to September. As food allergy becomes active again from August to January, the attacks recur, attributed, as already noted, too often to infectious colds rather than to the activated food allergy. Finally, regularly recurrent so-called head colds, with or without cough or asthma, that keep children out of school, must suggest food allergy as the frequent cause.

Dr. Fred W. Wittich, Minneapolis: Protection methods in the therapy of allergic states of the lower respiratory tract based on such an approach as Dr. Feingold's are rational. It is now generally recognized that paroxysms of asthma are not characteristic of all bronchial allergies. Allergic bronchitis has been described for some time in the literature on allergy as a "hypersensitive state which is frequently complicated by secondary infection." Unfortunately, the causative factors and the mechanism involved are frequently unrecognized by the physician who fails to apply proper allergy procedures in his practice. Avoidance or elimination measures, when practical, are paramount. If these are not possible, immunization offers the best protection. Meantime, adjunct symptomatic therapy assumes primary importance. Obstruction in many of these cases is not due so much to bronchospasm as it is to the result of edema of the mucous and increased mucous secretion. Segal has shown that greater protection from antiallergic agents is obtained when they are given in aerosol form rather than by the less direct intravenous route. Older children get relief when these aerosols with the hand nebulizer are used. For children, a combination of equal parts of a solution of 1:100 isopropylarterenol hydrochloride and 1:100 or 1:200 of phenylephrine (neo-synephrine®) hydrochloride, an effective bronchovasoconstrictor, in 10 per cent glycerine, which dilutes the strength of phenylephrine to less than 1:200, used by nebulization, is preferred. Orally, ephedrine and phenylpropanolamine are the drugs of choice, as Dr. Feingold has indicated. It is rational to expect the most rapid and sustained antiallergic effect by having these drugs reach the receptor cells in the bronchial mucosa by direct nebulization, supplemented by the xanthine compounds, theophylline or aminophylline, alone, orally, intravenously, or by rectal suppository, and preferably in combination with a barbiturate. Caution should be used by commencing with lower than average therapeutic doses and increasing or changing by clinical trial until the optimum beneficial effect, without side reactions, is determined. Besides being accomplishable by hydration and iodides, the removal of mucus may be greatly facilitated by the simple use of steam inhalations. When infection complicates the picture the procedures prescribed by Dr. Feingold are most satisfactory. Here, again, in the older children, an aerosol composed of a solution of crystalline penicillin G, 35,000 units in 0.50 cc. of distilled water, with 0.20 cc. of epinephrine or phenylephrine, with or without the addition of 0.10 cc. of glycerite of hydrogen peroxide in 10 per cent glycerine, has been found very effective. It may be used daily for five to seven days. I have also seen startling relief from a persistent cough in a few of these cases by the use of mild roentgen therapy in the hands of an expert.

Dr. Ben F. Feingold, Los Angeles: I should like to reemphasize the fact that allergic bronchial disease is a definite entity, provoked by the common allergens food, environmental factors and pollens, which produce definite tissue changes that are limited to the bronchial tree. In the aggravated form these tissue changes manifest themselves as bronchial asthma. When the parenchyma is involved in these cases, it is secondary to involvement of the bronchial tree; the result of inspissation of mucus and dehydration, which produces plugging, atelectasis and superimposed pneumonitis—the picture so frequently referred to as allergic bronchopneumonia. The therapist should keep in mind the medication that will relieve those factors that produce obstruction. Edema is a most important factor, along with bronchospasm and mucus plugging. The medication that [illegible] relieve these three factors should be the drug of choice. To date, our armamentarium is extremely limited. For the acute attack epinephrine is the drug of choice. To liquefy the plugs and relieve obstruction, hydration is imperative. Potassium iodide is the expectorant drug of choice. When infection is superimposed specific therapy should be directed against the infection. In bronchial allergy infection is a secondary factor. When infection in the form of bacteria or of bacterial products produces primary tissue hypersensitivity it does not affect the bronchial tree to produce the tissue reactions that explain the signs and symptoms of bronchial allergic disease or bronchial asthma. Parenchymal involvement in bronchial allergy is secondary to obstructive factors. Dr. Rowe has mentioned the fact that food may produce fever and has raised the question of the importance of infection in children with these diseases. General practitioners and pediatricians have seen many of these children with upper respiratory tract infections precipitating bronchial symptoms, who respond to the ordinary garden variety of therapy, that is, to the antibiotics and the sulfonamides. With such a good response to antibiotics, it is hard to believe that food is the precipitating agent. The failure to mention the psychosomatic factors is perhaps a reflection of our attitude toward their importance as causative agents in bronchial allergy and asthma in children. Like infection, psychosomatic conditions are contributory rather than primary. One so frequently observes children with a history of recurrent attacks of asthma or recurring attacks of bronchial allergy who will show complete adjustment in their behavior problems when their allergy is under control.

Rehabilitation of the Handicapped.—With close to 50 million people working under our compensation laws, with the cost of disability benefits insurance largely paid for by the workers themselves, with the cost of old age benefits paid for by taxation or our social security plan, it should be evident to everyone that it is the worker and not the employer who pays the cost of every kind of social insurance. It follows that when you . . . make it possible for a handicapped person to earn his living, you will have won a double victory. First, you will have restored the economic independence of a fellow human being. Second, you will have relieved a fellow worker of the burden of his support.—Ashley St. Clair, *Industrial Medicine and Surgery*, March 1951.

TRANSORBITAL LEUCOTOMY IN A STATE HOSPITAL PROGRAM

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and
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State hospitals throughout the United States are faced with the problem of an expanding general population with an increasing number of mentally ill, great numbers of whom are denied proper and adequate state hospital care because of the relatively static and insufficient number of available beds. It has been estimated that there are today 8,470,000 psychiatric cases in the United States, of which 938,000 are cases of psychoses and 434,000 of psychoneuroses.[1] Of the total 680,913 neuropsychiatric beds in the United States, comprising 47.9 per cent of all hospital beds, 562,678 are in state hospitals.[2] An estimated 311,000 additional beds [3] are required to meet the state hospital needs, and the state hospital overcrowding, nationally, averages 16.3 per cent.[4] This, in addition to the human, social and economic aspects, is a vital and urgent physical problem requiring attention. With approximately 210,000 new patients [5] being admitted annually to mental hospitals and with the increasing number of the aged and chronically ill populations of state hospitals, it can readily be seen that not only must more hospitals and beds be made available, but steps must be taken in the way of added therapeutic measures which can be used for the patients with chronic mental illnesses so as to restore them to society and relieve the mounting burden of nursing care within state hospitals.

A very sizable proportion of patients in state hospitals have already received the various present day accepted forms of therapy, and they either have made only temporary recoveries with frequent relapses or have failed to respond. A fair number of these patients might respond favorably to some form of psychosurgery. Since the development of prefrontal lobotomy by Egas Moniz,[6] its introduction to this country by Freeman and Watts [7] and its utilization in psychiatric clinics throughout the civilized world, other forms of psychosurgical procedures have been elaborated and are being used successfully in the treatment of certain mental disorders which heretofore had failed to respond to the less drastic methods of treatment.

There are a number of very practical considerations which the psychosurgical procedures of prefrontal lobotomy,[8] topectomy,[9] cortical undercutting,[10] thalamotomy [11] and lobectomy [12] fail of solution. All these methods require the services of a trained neurosurgeon (not enough of whom are to be had for all state hospitals); they entail moderate or extensive surgical attack; they are time consuming, and in the case of thalamotomy elaborate preparation is necessary; some necessitate the collaboration of a neurophysiologist and roentgenologist; the duration of hospitalization may be longer than that for the average craniotomy, especially in the case of prefrontal lobotomy; nursing care often is extensive; expense is relatively high, and postoperative epilepsy is a not infrequent sequela of those methods producing considerable cortical injury. Another factor, which has caused many general practitioners and psychiatrists to refuse to recommend psychosurgery for patients having even a disabling psychosis or psychoneurosis, has been the untoward personality changes frequently observed after the orthodox type of prefrontal lobotomy.[13]

It appears likely that the deficiencies of the above methods can be overcome, and the needs of a state hospital program met, by the technique known as transorbital leucotomy (or lobotomy), which was developed by Fiamberti [14] in 1937 and introduced to this country by Freeman [15] in 1946. Transorbital leucotomy has been used by a number of workers,[16] with varying results, this variability probably being due to differing techniques. Encouraging reports by Freeman,[15b] Jones and Shanklin,[16d] Haas and Williams,[16c] Rusk [17] and Moore and Winkelman [18] have brought to the fore the advantages of transorbital leucotomy. These are as follows: The operation can be performed by a competently trained psychiatrist or neurologist on the staff of the psychiatric institution utilizing this procedure; from 12 to 15 patients can be operated on by this method in the time required for one patient by most of the operative techniques previously mentioned; the patients are ambulatory within a matter of hours after operation and require little or no nursing attention after the immediate postoperative period; expense to the patient and hospital is minimal as compared with the other psychosurgical methods; postoperative epilepsy is of extremely low frequency or is absent, in view of the fact that only a small area of cortex

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From the University of Pennsylvania Graduate School of Medicine (Dr. Moore) and Wernersville State Hospital (Dr. Hill, Superintendent, and Dr. Lutz).

Mr. Frank S. Dimon, M.S.W., assisted in the statistical work, and Mrs. Marie Duell, R.N., and her staff assisted in the operating room and with the nursing care.

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is injured, and this in a relatively nonepileptogenic zone, and the operation does not produce undesirable personality traits or intellectual deficits or worsen existing ones.[19]

CLINICAL MATERIAL AND METHOD

One hundred and two patients,[20] 60 women and 42 men, have been operated on since June 16, 1949. The last group of patients were operated on March 23, 1950; thus, these patients have been observed from approximately two to 10 months. The age range of the patients was from 18 to 54 years. The duration of illness varied from two to 24 years (fig. 1), and the distribution of patients in terms of length of illness can be seen in the chart. There was no case of repeated transorbital leucotomy. The patients in this series had previously received numerous forms of therapy, more than one-half having been treated in private mental hospitals, where they had been given psychotherapy, pentylenetetrazole (metrazol®) shock, insulin shock and electric convulsion treatment. Two patients had had prefrontal lobotomies, without benefit. The patients who had been treated in the Wernersville State Hospital had also received the abovementioned forms of treatment and had failed to respond satisfactorily. Patients admitted during the two years prior to this report have had intensive psychotherapy before other measures were employed. The great majority of our patients have been ill for considerable periods and constitute the group who have been resistive to available therapeutic measures and have represented serious problems in nursing care. A large part of them have been drawn from the "back" wards and have heretofore been considered as permanently nonsalvageable, custodial cases.

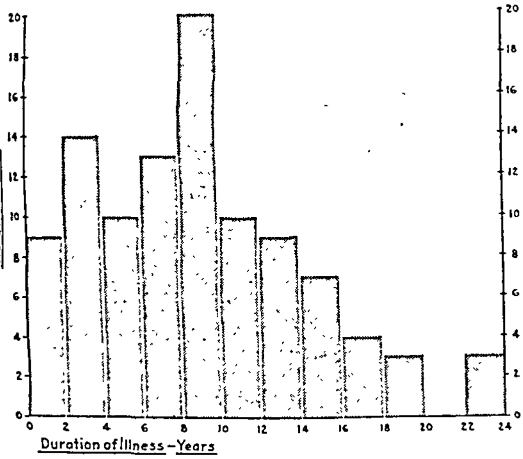

Fig. 1.—Distribution of patients with various psychiatric disorders according to duration of illness.

It will be seen from table 1 that the 97 cases of schizophrenia represent almost the total number of cases, and this reflects the main burden of the therapeutic problems in most state hospitals. There were two cases each of involutional melancholia and mental deficiency with psychosis, and one case of psychopathic personality. The two patients with involutional melancholia had failed to respond to repeated courses of shock therapy. The two mentally defective patients with paranoid psychosis had aggressive, assaultive behavior, evolving from a paranoid trend. The patient with a psychopathic personality had previously manifested persistent disturbing, aggressive, antisocial behavior and required constant supervision during the nine years preceding operation. Among the 97 cases of schizophrenia, there were 39 of the hebephrenic, 34 of the catatonic, 13 of the paranoid and 11 of the mixed hebephrenic and catatonic type (table 2).

Psychological studies could not be done on all 102 patients before and after operation, for physical reasons; therefore a representative random sample of 14 patients were studied before and after operation, with the following battery: Wechsler-Bellevue Intelligence Scale—Form I; Shipley Institute of Living Scale; House-Three-Person Drawings; Machover Body Form; Bender Gestalt test; Szondi test, and Rorschach test.[21]

The operative technique used with the first 43 patients was that originally described by Freeman,[15c] in which bilateral sections were made at 4 or 4.5 cm. and at 7 cm. from the margin of the upper eyelid, thus severing thalamocortical fibers to areas 11 and 12 and 9 and 10 of Brodmann. For the remaining 59 patients, who represented the more seriously ill, the modification of Moore [22] was used, in which sections were made at 4.5 and 7 cm. plus a lateral sweep, which presumably severed fibers to area 46. The preparation for operation was the one already described in a previous communication.[22] Briefly, it consists of the careful selection of patients, with exclusion of those with suspected organic cerebral disease, and the prophylactic use of penicillin in oil (300,000 units), given intramuscularly, and sulfadiazine and sulfamerazine, administered orally the day before, the day of and the day following transorbital leucotomy. Menadione, ascorbic acid, and rutin were also given for the same period. The time required to perform transorbital leucotomy is only a few minutes, and, although intravenous injections of thiopental (pentothal®) sodium has been used by some for anesthesia, we have employed electric shock coma, as advocated by Freeman,[15c] as the most satisfactory and expeditious method. The instrument used was a transorbital leucotome (transorbitome) devised by one of us (M. T. M.) [23] (figs. 2, 3 and 4).

RESULTS

Since many of our patients presented advanced stages of their respective psychoses, comparison of moderate degrees of improvement in them with results in patients less severely ill required the establishment of three categories of improvement: recovery, good or moderate improvement, and minimal improvement. Patients who returned home and who, in the evaluation of the family, the social service worker and the physician, had established their usual prepsychotic level of social and economic adjustment were considered recovered. Patients who have been able to leave the hospital and effect a satisfactory social adjustment at home, or those who remained in hospital and have made an adequate adjustment at a subprepsychotic level were designated as showing good or moderate improvement. The patients who

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13. Rylander, G.: Personality Changes After Operations on the Frontal Lobes, London, Oxford University Press, 1939. Porteus, S. D., and Kepner, R. DeM.: Mental Changes After Bilateral Prefrontal Lobotomy, Genet. Psychol. Monogr. **29**: 4, 1944. Ström-Olsen, R., and Tow, P. M.: Late Social Results of Prefrontal Leucotomy, Lancet **2**: 87, 1949.

14. Fiamberti, A. M.: Proposta di una tecnica operatoria modificata e semplificata per gli interventi alla Moniz sui lobi prefrontali in malati di mente, Rassegna di studi psichiat. **26**: 797, 1937.

15. (*a*) Freeman, W.: Transorbital Lobotomy: A Preliminary Report of 10 Cases, M. Ann. District of Columbia **17**: 257, 1948; (*b*) Transorbital Leucotomy, Lancet **2**: 371, 1948; (*c*) Transorbital Lobotomy, Am. J. Psychiat. **104**: 734, 1949.

16. (*a*) Rizzatti, E., and Borgarello, G.: La leucotomía prefrontale di Egas Moniz in 100 casi di psicopatie gravi, di cui una metà compresibili nel quadro della più completa dissociazione psichica, Schizofrenie **7**: 241, 1938. (*b*) Fernández-Morán, H.: Leucotomía e inyecciones en los lóbulos prefrontales por la vía transorbitaria, Arch. venezol. Soc. de oto-rino-laring., oftal., neurol. **7**: 109, 1946. (*c*) Haas, F. E., and Williams, D. E.: Transorbital Lobotomy: A Preliminary Report of 24 Cases, South Dakota J. Med. & Pharm. **1**: 191, 1948. (*d*) Jones, C. H., and Shanklin, J. G.: Transorbital Lobotomy: A Preliminary Report of 41 Cases, Northwest Med. **47**: 421, 1948. (*e*) Ferrero, M.: La leucotomía prefrontale transorbitaria alla Fiamberti e sue indicazioni, Note e riv. di psichiat. **71**: 1, 1942. (*f*) Walsh, J.: Transorbital Leucotomy—Some Results and Observations, Lancet **2**: 465, 1949.

17. Freeman, W.: Theoretical and Clinical Considerations of Various Leucotomy Techniques, Proc. Roy. Soc. Med. **42**: 28, 1949.

18. Moore, M. T., and Winkelman, N. W.: Some Experiences with Transorbital Leucotomy (A Review of Results in 110 Cases), read before the 106th Annual Meeting of the American Psychiatric Association, Detroit, May 3, 1950.

19. Robinson, M. G.: Discussion on Freeman, W.: Transorbital Lobotomy, Am. J. Psychiat. **105**: 740, 1949.

20. Total population of Wernersville State Hospital is 1,900 patients.

21. Henry Passaro, M. S., psychologist to the Wernersville State Hospital, made the psychological studies.

22. Moore, M. T.: La technique de la leucotomie transorbitaire, Encéphale **39**: 109, 1950.

23. Moore, M. T.: A New Instrument for Performing Transorbital Leucotomy, Am. J. Psychiat. **105**: 741, 1949. (*b*) The Moore Transorbitome, ibid. **106**: xi (July) 1949.

had made improvement in only a small area of their abnormal mental processes and in their behavior were placed in the group showing minimal improvement. Included in the last group were patients who formerly were assaultive, hostile and destructive and who became sociable and employable in hospital, and those who had been untidy, slovenly and smearing and who modified these traits and showed an interest in their personal appearance. Malamud's rating scale [24] was used in determining the degree and spheres of improvements.

Of the 102 leucotomized patients, 25 were discharged from hospital. Fifteen of these were considered to represent total recoveries, and the distribution of these patients in terms of duration of illness is seen in figure 5. The greater number of total recoveries were in patients ill less than 10 years, but it will be noted in figure 1 that the majority of patients (66) had been ill less than 10 years. It is heartening to see total recoveries in schizophrenic patients ill up to 14 years. It has been observed that some schizophrenic patients manifest improvement rather abruptly from two to six months after operation,[18] and this may tend to enlarge the number of discharged patients in this series.

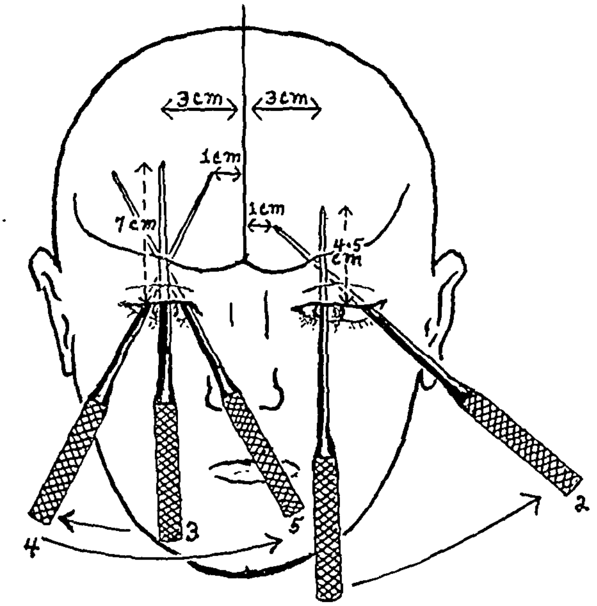

Fig. 2.—Schematic drawing of technic of transorbital leucotomy. Positions *1* to *2* undercut thalamocortical fibers to Brodmann's areas 11 and 12. *Positions 3 to 4 to 5 undercut fibers to areas 9 and 10.* Both maneuvers are performed on each side, plus the lateral sweep undercutting fibers to area 46, as shown in figure 4 (transorbitome pictured without extension arm).

This drawing, and figures 3 and 4, are modified illustrations based on drawings by Miss E. A. Sweezy, of Queen Mary Hospital, Montreal, Canada.

The total number of patients with over-all improvement was 77, or 75.5 per cent (table 1). The percentage of cases of over-all improvement was fairly evenly distributed over the spectrum of duration of illness, except for the four to six year and the six to eight year groups, as is shown in figure 6. Although there is a tendency for the number of total recoveries to diminish beyond the 10 year period of duration of illness, figure 6 shows the encouraging evidence that over-all improvement is well represented in patients ill more than 10 years. The small number of patients who comprised the groups other than the schizophrenic, as seen in table 1, does not offer a statistically valid basis, in this series, from which to draw conclusions regarding the relative value of transorbital leucotomy in these disorders. This aspect will be considered later in the discussion. Both patients with involutional melancholia have maintained full recovery since operation. One mentally deficient patient with a paranoid psychosis was relieved of his assaultiveness, surliness and hallucinatory paranoid trend. The patient with the psychopathic personality, previously mentioned under "Material and Method," after transorbital leucotomy became stable and polite, observed the social amenities and has been continuously employed as the hospital librarian.

Table 1.—*Distribution of Psychiatric Disorders in One Hundred and Two State Hospital Patients*

Diagnosis	No. Cases	Improvement No. Cases	Improvement Per Cent
Schizophrenia	97	73	75
Involutional melancholia	2	2	100
Mental deficiency with psychosis	2	1	50
Psychopathic personality	1	1	100
Total	102	77	75.5

Of the types of schizophrenia, the catatonic form responded most favorably to transorbital leucotomy, with a total recovery rate of 29.4 per cent and an over-all improvement rate of 88.2 per cent (table 2). The patients in this group formerly had persistently relapsed when shock therapy was discontinued, or had relapsed during treatment. In the paranoid category there was a total recovery rate of 7.7 per cent and an over-all improvement rate of 84.6 per cent. The paranoid schizophrenic patient who made a complete recovery was freed of his paranoid delusional ideational trend.

There were no total recoveries in the hebephrenic or the mixed groups; however, the 28.2 per cent "good" improvement rate for the hebephrenic group, and the 9 per cent "good" improvement rate for the mixed group have been gratifying, as these patients are now employed in the hospital, are able to adjust to life in convalescent and open wards and in some cases have returned home, making satisfactory social adaptations. The "minimal" improvement rates for patients with hebephrenic and mixed types lift the over-all improvement rates, respectively, to 61.5 and 72.6 per cent. The distribution of patients who recovered or showed improvement among the schizophrenic patients is shown in figure 7.

Table 2.—*Relation of Improvement to Type of Schizophrenia*

Schizophrenia	No. Cases	Improvement: Minimal No.	Minimal %	Good No.	Good %	Recovery No.	Recovery %	Total % Improvement
Hebephrenic	39	13	33.3	11	28.2	0	0	61.5
Catatonic	34	12	35.3	8	23.5	10	29.4	88.2
Paranoid	13	6	46.1	4	30.8	1	7.7	84.6
Mixed hebephrenic and catatonic features	11	7	63.6	1	9.0	0	0	72.6
Total	97	38	39.2	24	24.7	11	11.3	75.2

The minimal improvement, in all classes of schizophrenic patients, constitutes a major advantage in a state hospital, in that such patients, who had been serious nursing problems, have shown improvement in their attitude and behavior, are approachable by ward personnel, have discontinued their assaultive, surly, aggressive tendencies, have ceased or lessened their destructiveness and have become amenable to hospital protocol. Illustrative of "minimal" improvement are a schizophrenic patient whose eating habits were those of an animal and who now uses utensils without close supervision, another who had required restraint for five years and at present is an ideal open-ward worker, and, finally, a patient who had been extremely untidy and destructive and who now sits unattended in the ward and diligently works on a jigsaw puzzle.

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[24] Malamud, W., and Sands, S. L.: A Revision of the Psychiatric Rating Scale. Am. J. Psychiat. **104**: 231, 1947.

The time of appearance of improvement after transorbital leucotomy varied considerably in our series. It appeared with dramatic suddenness, within a day or two, in the cases of involutional melancholia, and several of the patients with catatonic schizophrenia also showed startling improvement immediately after operation. In general, however, in patients who have maintained their gain, the improvement developed over a period of several weeks after operation. Many among the improved group manifested the salutary change after the fourth to the sixth postoperative month. Two schizophrenic women patients who had been chronically disturbed for more than five years had dramatic immediate relief of symptoms but relapsed a month after operation. These patients have now responded more favorably to electric convulsive therapy than prior to transorbital leucotomy.

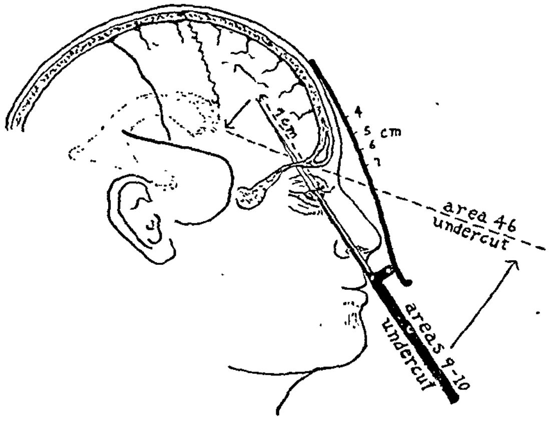

Fig. 3.—Lateral view of transorbitome (with extension arm attached) at the 7 cm. mark (distance from tip of instrument to the rim of the upper eyelid). Note the perforation of the orbital plate behind the frontal sinus.

In the main, patients who showed intense agitation, anxiety, disturbances in the affective sphere or symptoms of autonomic derangement responded best to transorbital leucotomy. This was also true of those who previously had done well with shock therapy but who failed to maintain recovery.

Of the two patients who had had orthodox prefrontal lobotomies, one responded favorably after transorbital leucotomy and now is employed in the hospital, lives in an open ward and is improved in her social attitudes, despite the persistence of her psychotic ideation. The other patient improved temporarily, then relapsed and at present is maintained at a moderately improved status by means of electric convulsive therapy.

Among the 11 totally recovered schizophrenic patients, four had a history of excessive use of alcohol. After transorbital leucotomy they did not have a decreased tolerance to alcohol when used, but they were able to abstain from bouts of heavy drinking. These patients had indulged in alcohol to allay a dominant element of anxiety, and subsequent to transorbital leucotomy anxiety was significantly lessened or abolished.

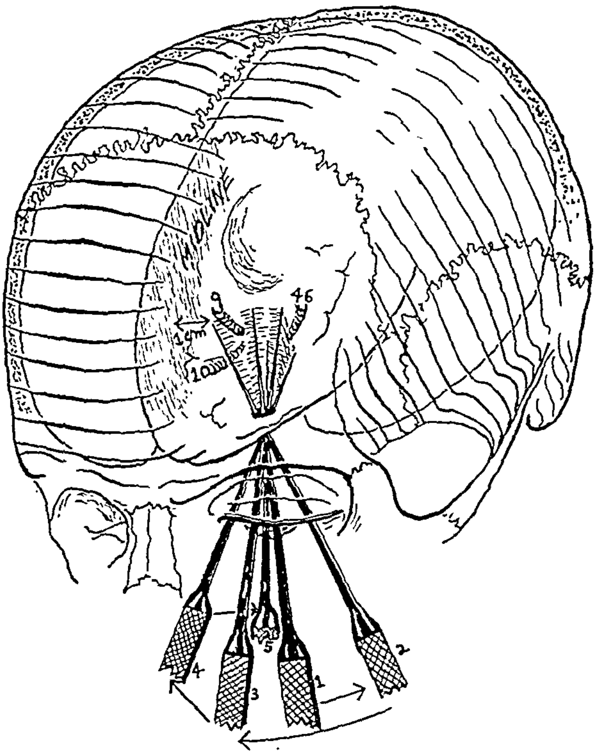

Fig. 4.—Phantom drawing illustrating the relative positions of the transorbitome during sectioning of fibers to areas 9 and 10 and to area 46. The instrument at the 7 cm. mark is moved from positions 1 to 5, as shown.

None of the patients given the battery of psychological tests showed any evidence of adverse personality or intellectual changes after transorbital leucotomy, nor did those not studied by psychological tests show clinical manifestations of overt emotional or intellectual deficits. Among the improved patients, the significant changes disclosed by the psychological tests were decreased anxiety, better control of explosive affective responses, less rigidity of personality, better organization of thinking and improved judgment. Abstract thinking was not affected in either direction. General performance was greatly improved in those patients in whom anxiety was a dominant feature prior to operation.

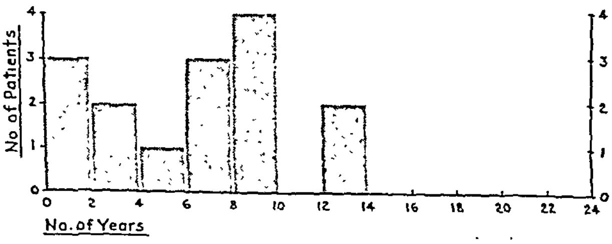

Fig. 5.—Distribution of 15 patients who had complete recovery after leucotomy according to duration of illness.

COMPLICATIONS (TABLE 3)

Two patients had postoperative hemorrhage, exhibiting frankly bloody cerebrospinal fluid, without localizing neurological signs. One died the day of operation, and the other after 24 hours; permission for necropsy was not granted. The mortality rate was 1.96 per cent, as compared with a 3 per cent mortality rate in 1,000 cases of prefrontal lobotomy reported by the Board of Control, England and Wales [25]; 6 per cent in 48 cases of prefrontal lobectomy reported by Peyton, Noran and Miller [12]; 3.2 per cent in 44 cases of thalamotomy reported by Spiegel and Wycis [26]; 4.6 per cent in 43 cases of selective cortical undercutting reported by Scoville,[10] and 3.7 per cent of 107 cases of frontal lobotomy (Lyerly technique) reported by Oltman and associates,[27] our mortality rate is favorable.

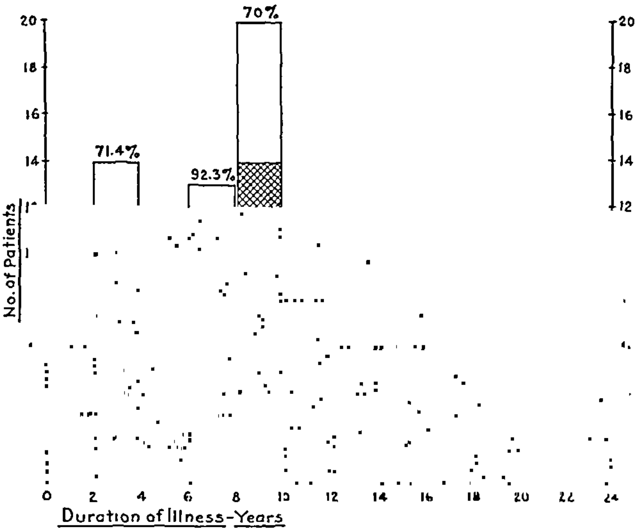

Fig. 6.—Relation of improvement or recovery after leucotomy to duration of illness of patients with various psychiatric disorders.

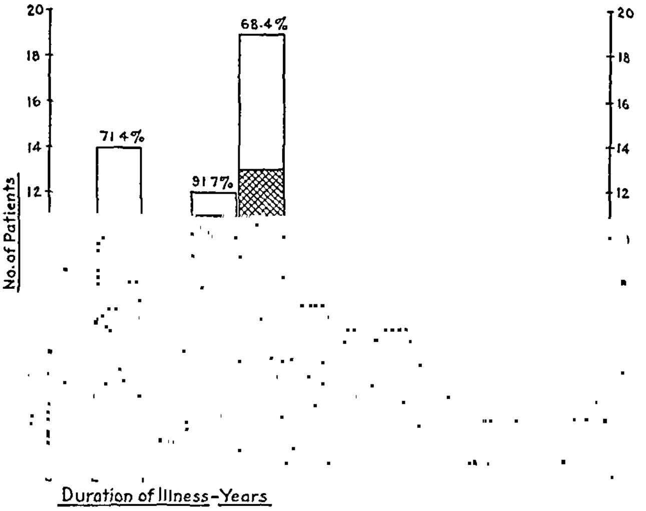

Fig. 7.—Distribution of recovery or improvement among schizophrenic patients after leucotomy.

Urinary incontinence occurred in 11 patients and terminated spontaneously in 10 patients within 24 hours. It persisted 30 days in one patient. Drowsiness appeared in five patients, in sharp contrast to the usual alertness of the patients within 20 to 30 minutes after operation. The drowsiness disappeared within 24 hours in four patients and endured seven days in one patient, who had associated fever.

One patient had a periocular hematoma, due to rupture of a conjunctival vein at the point of entry of the transorbitome. This subsided within 72 hours and finally was completely resolved in five days.

There were no postoperative infections, and in none of the patients did epilepsy develop.

COMMENT

By far the greater load of responsibility in most state hospitals consists of the care of chronically ill patients who already have been treated by one or more of the numerous methods now employed for the treatment of the mentally ill. Psychotherapy; psychoanalysis; narcosynthesis, and metrazol,® insulin and electric convulsion therapy, although remarkably effective, leave a residue of unresponsive or frequently relapsing patients, who eventually constitute a large proportion of the state hospital population. This is especially true of the schizophrenias, the obsessive-compulsive psychoneurosis and some of the affective disorders. When the psychosis has endured for years, the patient often becomes inaccessible, disturbed, assaultive; he requires restraint, and with the passage of time he is rejected with increasing indifference by his acquaintances, friends and the members of his family. These patients ultimately become desocialized persons.

TABLE 3.—*Complications Following Transorbital Leucotomy*

Complications	No. Cases	Comment
Hemorrhage	2	2 deaths—mortality 1.96%
Incontinence of bladder	11	Endured 1 day, 10; endured 30 days, 1
Drowsiness	5	Endured 1 day, 4; endured 7 days, 1
Fever	2	Endured 7 days, 2
Periocular hematoma	1	Subsided in 3 days, resolved in 5 days

It was to the problem of these "lost" patients that we applied the procedure of transorbital leucotomy, which we have found to be simple, rapid in performance, relatively safe, requiring a minimum of equipment and nursing personnel and one which did not produce postoperative personality or intellectual deficits. The other forms of psychosurgery were beyond the reach of our state hospital because of the specialized and costly requirements. The demands on the nursing staff in a procedure such as prefrontal lobotomy would preclude its use with large numbers of patients. Of six patients, resident at Wernersville State Hospital, who had prefrontal lobotomies, two required continuous intensive nursing care for six months. There were definite untoward personality changes in these patients, and retraining was necessary, placing a heavy drain on the nursing resources.

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[25] Board of Control (England and Wales), Results in 1,000 Leucotomies, London, His Majesty's Stat. Off. 1947.

[26] Spiegel, E. A., and Wycis, H. T.: Thalamotomy (Theoretical Considerations, Practical Results and Neurosurgical Aspects), Digest Neurol. & Psychiat. **18**: 150, 1950.

[27] Oltman, J. E.; Brody, B. S.; Friedman, S., and Green, W. F.: Frontal Lobotomy, Am. J. Psychiat. **105**: 742, 1949.

Transorbital leucotomy in our hands proved to be ideally suited to a state hospital. On operative days as many as 15 patients were operated on within a span of 1½ hours. Other psychosurgical methods require as much time or more for one patient. Patients were ambulatory within 24 to 48 hours and required no nursing care after the immediate postoperative period. Of the patients who failed to improve after transorbital leucotomy, none was made worse clinically.

The morbidity in this series of patients was extremely low, and the nature of the complications, aside from hemorrhage, was insignificant. Our mortality rate compared with that for other psychosurgical methods has already been discussed and is distinctly favorable, and increased experience should lower the figure of 1.96 per cent to a negligible one. The absence of postoperative convulsive seizures in this series, and the extreme infrequency of the occurrence of epilepsy in the series reported by Freeman [28] and Moore and Winkelman [18] is in sharp contrast with the occurrence of postoperative epilepsy with the other psychosurgical methods—prefrontal lobotomy, 7 to 20 per cent,[29] cortical undercutting, 9.3 per cent [10]; topectomy, 16 per cent,[30] and lobectomy, 28 per cent.[12]

It is not to be inferred from the large proportion of schizophrenic patients comprising our series that other types of psychoses and psychoneuroses are not suitable for transorbital leucotomy. Freeman,[28] Jones and Shanklin,[16d] and Moore and Winkelman [18] have reported gratifying results in cases of the obsessive-compulsive psychoneuroses, anxiety states and affective psychoses. The series of Moore and Winkelman [18] and a large part of Freeman's [28] consisted of patients derived from private practice, and hence the element of selection was a determining factor in the statistical results. The human and socioeconomic problems encountered in state hospitals should not be subject to statistical considerations. If it is possible to salvage but a few patients, without producing psychic and behavioral changes worse than had existed, a real advance will have been made.

As the result of our experience, we feel justified in recommending that patients admitted to state hospitals should be offered the advantages of transorbital leucotomy when other forms of therapy have repeatedly failed of their purpose. Protracted conservatism in the treatment of the patient with an admittedly chronic mental disorder merely permits of the development of more deeply grooved patterns of neuronal and behavioral abnormalities. Although we believe that the type of patients under discussion should have the operation within one to three years after other measures have failed or show no promise of success, the results of our studies indicate that some patients ill as long as 10 to 24 years may effect either recovery or satisfactory improvement.

Transorbital leucotomy and other psychosurgical procedures undoubtedly have proved a boon in many cases of intractable mental disorders, but it must not be concluded, nor do we wish to create the impression, that psychosurgery represents the ultimate answer to the difficult questions now confronting the psychiatrist. Psychosurgery is merely a useful tool, which, in the light of our meagre knowledge, yields satisfying results today, but which in future may be considered a crude transition to the biochemical cerebral scalpel to come.

SUMMARY AND CONCLUSIONS

A group of 102 state hospital patients in whom bilateral transorbital leucotomy was performed is reported.

1. The series was composed of 97 patients with schizophrenia, 2 patients with involutional psychosis, 2 patients with mental deficiency with psychosis and 1 patient with psychopathic personality.
2. The patients comprising the schizophrenic and involutional groups had previously received the various forms of accepted treatment, without benefit.
3. Among the 97 schizophrenic patients, those with the catatonic type had an over-all improvement rate of 88.2 per cent and a recovery rate of 29.4 per cent; those with the paranoid type, an improvement rate of 84.6 per cent and a recovery rate of 7.7 per cent, and those with mixed and hebephrenic types, over-all improvement rates of 72.6 and 61.5 per cent, but no recoveries.
4. Both patients with involutional psychosis recovered.
5. One mentally deficient patient with psychosis recovered from the psychotic phase.
6. The one patient with psychopathic personality recovered.

The morbidity and mortality are discussed and compared with those for the other forms of psychosurgery employed today. The advantages of transorbital leucotomy for a state hospital program, over the more elaborate psychosurgical procedures, are based on the ease and rapidity of performance, the relative safety, the low cost, the low drain on nursing facilities, the negligible morbidity and low mortality and the comparable or superior results.

Transorbital leucotomy is recommended as a useful adjunct to the various therapies employed in state hospitals, for patients who are amenable to this procedure and who heretofore have been relegated to the status of prolonged custodial care.

ABSTRACT OF DISCUSSION

Dr. Margaret A. Kennard, Portland, Ore.: This excellent presentation suggests many topics for discussion. The point that the transorbital leucotomy assists in the practical considerations of a state hospital in relation to the patients in the "back wards," is important. The ease of operation and the lessening of the nursing care are of practical importance. There is less personality disorder and less epilepsy after this operation, and the method has been effective in some instances in which other methods have failed. It has worked particularly well in cases of affective disorders. This report leaves many points for future discussion. The relation to the autonomic system is interesting. From investigations on animals, largely primates, it is known that the orbital surface of the frontal pole is related to the autonomic system, for lesions in this region will produce changes in respiratory rate, pulse rate, and blood pressure and will influence gastrointestinal motility. It is known, from experiments carried out by Drs. Robert and Kenneth Livingston at the Boston Psychopathic Hospital, that electrodes placed on the orbital surface of the human brain will produce changes in blood pressure and pulse rate; so there is plenty of evidence of cortical autonomic localization, is at least in part, on the orbital surface of the frontal pole. Incidentally, if, as Dr. Moore says, he is interrupting the fibers from areas 9 and 10, he is interrupting

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28. Freeman, W.: Psychosurgery, read before the 106th Annual Meeting of the American Psychiatric Association, Detroit, May 1-5, 1950.
29. Freeman, W.: Psychosurgery, Am. J. Psychiat. **105**: 581, 1949.
30. Columbia-Greystone Associates, Selective Partial Ablation of the Frontal Cortex—A Correlative Study of Its Effects on Human Psychotic Subjects, edited by F. A. Mettler, New York, Paul B. Hoeber, Inc., 1949.

fibers which lead to tracts on the lateral surface also, and regions which, so far as we know, have to do with motor performance and therefore might relate to postoperative epilepsy. Other investigators are operating on the cingular gyrus and reporting similar kinds of changes, notably in affect and in the amount of aggression of the patients. The reports of similar changes in these two areas are reasonable, for both the cingular gyrus and part of the orbital surface of the frontal pole are developmentally of the same nature; they are the oldest parts of the frontal pole. They connect specifically with the temporal lobe and, through the temporal lobe, in part at least, with the hypothalamus. It is reasonable to suppose, therefore, that these areas should have something to do with the emotional and autonomic performance of the individual organism. It is still possible, however, from our present knowledge, that such changes have nothing to do with the specific cortical area, but that frontal ablations have merely a quantitative effect. One could then take away a certain amount of tissue from any part of the lobe and produce the same kind of results. The long term results of any frontal lobotomy are not well known at present. I question whether there is less epilepsy after the transorbital leukotomy, for data from war injuries show that many persons do not have onset of epilepsy until months after the original insult. This paper is an excellent clinical report and one of the best I have seen on the frontal pole in relation to human behavior. But it is not well controlled, and you as clinicians would criticize me as an investigator if I published anything which had as little preoperative and postoperative follow-up. This is consistently true of all reports published at the present time. One finds on reviewing the literature on the frontal poles, that we rely a great deal on data which are coming from England and from Sweden and the other Scandinavian countries. This is, in part, due to the fact that for many years in those countries they have had a central board of information and control in relation to the frontal lobotomies. Enormous numbers of transorbital lobotomies are being done in this country about which we know nothing, because they are being done, quite correctly, by private physicians, who see only one, two or three in the space of a short time. If we had had a central board or an organization for information in relation to frontal lobotomies in the past 10 years, we should know a great deal more than we do at present. I wonder if, under the auspices of some organization, such as the American Medical Association, it would not be well to organize something of this kind, not for the control of lobotomies, but for the dissemination of information, so that, in the next 10 years, we might be able to have a more reasonable working knowledge of the lobotomy and be able to work on the patient, not in the back ward, but before he gets to the hospital.

Dr. Walter Freeman, Washington, D. C.: Most hospitals are ill equipped for major neurological surgery, and few of them have neurosurgeons on the attending staff or the rather elaborate setup for surgical convalescent care. Therefore, transorbital lobotomy seems likely to find its place in the therapeutic armamentarium of the state hospital. Four factors are of importance in psychosurgery. Of these, safety and effectiveness seem to have been largely controlled. Accuracy has been sought by neurosurgeons interested in topectomy, although they have stated that the quantity of frontal cortex removed is more important than the exact location. Finally, availability of psychosurgery must be considered. The problem of hospitalization is growing, admissions to psychiatric hospitals running over 300,000 in 1949. Transorbital lobotomy, as Dr. Moore has stated, brings psychosurgery to the place where it is most needed. There is growing realization that the personality change observed after lobotomy usually resembles that of a "burnt-out" psychosis. Only seldom is the syndrome of frontal lobe deficit encountered, and this occurrence means that the lobotomy has been needlessly extensive. Furthermore, shock therapy, while it may control excited and vicious behavior, tends to mask the process of deterioration, so that when lobotomy is finally considered the opportunity for constructive reintegration of the personality is likely to be past. Then it is the aim of the surgeon to arrest the psychotic process by a radical or maximal operation. Dr. Moore has shown that transorbital lobotomy of itself leaves no distressing residuals and has few complications. Therefore, it may be applied early in the course of a mental disorder, with good chances of returning a normal individual to society.

Dr. Karl Von Hagen, Los Angeles: Dr. Moore and his associates have presented evidence that a relatively simple neurosurgical procedure may be of great benefit to a certain number of patients. It is this simplicity of procedure which troubles me, because it will be available to many physicians, some of whom may not apply the rigid requirements for the operation and therefore may operate needlessly and inadvisedly. This could bring psychosurgery into disrepute, thus interfering with the scientific progress of psychosurgery, which should provide additional knowledge of the function of the frontal lobes. I have had little personal experience with this procedure, largely because of my type of practice, and partly because of some reluctance to recommend such an operation. It is difficult, on the basis of my concept of cerebral function, to accept the statement that no adverse psychological functions can be demonstrated. These patients are psychotic, and adverse emotional factors are difficult to demonstrate in such patients. It is likely that if this procedure is applied to psychoneurotic patients, which is inevitable, emotional defects will be manifest. I believe that the frontal lobes serve to utilize the concepts that are stored posteriorly for the best adjustment of the individual in his environment and any destructive procedure, such as transorbital leucotomy or the other lobotomies, should leave some defect, which, in the cases I have seen, is largely in the field of affect—emotional flattening, lack of consideration for the feelings of others, lack of ambition and some defect in introspection. I feel that this procedure, properly used, should be of great benefit to the chronic psychotic patient in the state hospital, but if its use is allowed to spread indiscriminately to other types of patients it will probably be detrimental to the advance of psychosurgery.

Dr. Matthew T. Moore, Philadelphia: We have by no means solved all the problems of psychosurgery. It may be that some day we shall look back on this age as a barbaric one in many respects, not alone in psychosurgery. Dr. Kennard has noted some important phases in the approach to psychosurgical procedures. As the result of the significant neurophysiological contributions of Fulton and others, prefrontal lobotomy and other psychosurgical procedures have been made possible. Dr Kennard commented on the autonomic functions of the frontal lobe and the possible aberrations resulting from psychosurgery. Undercutting of the cingular gyrus, as advocated by Scoville, has produced autonomic disturbances, such as tachycardia, drowsiness and incontinence. In our series, we had 11 cases of urinary incontinence, in 10 of which it endured for one day and in one for 30 days. There were five cases of drowsiness, in four of which the complication endured one day and in one for a week. In the series of 110 cases reported by Dr. Winkelman and myself, there were 11 cases of urinary incontinence, which disappeared spontaneously within two days in most instances. The assessment of the value of any psychosurgical procedure obviously cannot be complete unless the patients have been carefully observed for many years after operation. However, commissions are already in operation, and others are in the process of development, in order properly to evaluate results. Epilepsy has not appeared in our series, and in the series reported with Dr. Winkelman there was one case of postoperative convulsive seizures. In this case the seizures disappeared after a second transorbital leucotomy was performed. Dr. Von Hagen's remarks are timely, but I do not think it is necessary to introduce such a pessimistic note. Any new procedure which is introduced may be abused by some persons; however, the abuse of a procedure because of its simplicity should not condemn the procedure; rather, it reflects on those who use it. Adverse psychological factors have not been observed in our patients as the result of transorbital leucotomy, and we are in agreement with Robinson, who examined Freeman's patients, that none of the disturbing personality disturbances which are a common sequel to prefrontal lobotomy have been encountered in patients who have been operated on by the transorbital route. Our main concern is a realistic and pragmatic one. We must weigh the advantages against the disadvantages in subjecting chronically ill, and apparently nonsalvagable, patients to a procedure which may produce some adverse personality changes, but which offers so much in the way of restoring them to society and cutting down the tremendous burden of care and cost to state hospitals and other institutions.

INCIDENCE OF TRICHINELLA INFECTIONS IN SAN FRANCISCO, 1950

Rodney R. Beard, M.D., San Francisco

About 20 years ago interest in human trichinosis in the United States was stimulated by Queen's work,[1] in which he showed the incidence of infections, as measured by recovery of larvae from human diaphragms by peptic digestion, to be far higher than would be indicated by the reported diagnoses of clinical trichinosis. His study was followed by those of a succession of investigators who used similar techniques. Extensive studies of trichinous infections in men and in hogs were made, notably by Hall and Collins, and others working with Willard Wright at the National Institute of Health.[2] It was established that infections by Trichinella spiralis were quite common. Larvae were found in about 16 per cent of the human diaphragms collected in various parts of the United States. Wright, Jacobs and Walton [3] concluded that there was no correlation between Trichinella infection and sex, civil or military status, past military service, occupation, mental hospitalization, urban or rural residence, or social-economic status.

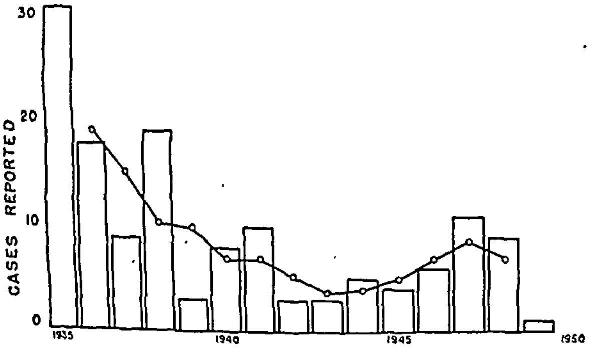

Chart illustrating the incidence of trichinosis in San Francisco, 1935 to 1949, as well as the three year moving average. (The data were supplied by the San Francisco Department of Public Health.)

One of the early investigations in this field was done in San Francisco by McNaught and Anderson,[4] who in 1936 reported on the examination of 200 human diaphragms in which they found an incidence of infection of 24 per cent.

These developments aroused considerable popular interest, and the meat-packing industry cooperated with public health agencies in a rather vigorous campaign to educate the public to cook pork thoroughly. The Federal Meat Inspection Service established regulations to insure the destruction of trichinae in pork foods intended for use without further cooking, as did some state and local authorities. The San Francisco Department of Public Health, aware that this city was a center for the production of Italian style salami, an uncooked product, stringently enforced rules providing for adequate salting and drying of this commodity or prior killing of trichinae by freezing. Since 1944 there has been but one report on necropsy studies of the incidence of this infection, a series of 50 from Mississippi showing a rate of 6 per cent.[5] Although it has not been spectacular, there has been a noticeable decline of reported cases of trichinosis in San Francisco since 1935, as shown in the accompanying figure. This has occurred despite a pronounced increase in population. Whether the decline resulted from fewer infections or from other factors is uncertain. Having become thoroughly familiar with the technique used by McNaught and Anderson and having access to necropsy material from the same sources as they, my associates and I thought it opportune to repeat the work with the purpose of comparing the current incidence with that reported in 1936.

The staff of the department of pathology of Stanford Medical School and the pathologist of the French Hospital of San Francisco were asked to take the diaphragms from all bodies on which autopsies were conducted except those of infants; a few were missed by neglect or by oversight on the part of some of those concerned, but there were no detectable systematic exclusions, and it is believed that a random sample was obtained.

METHOD

The diaphragms were ground in a household meat chopper. Pains were taken to avoid contamination of one specimen by fragments from another. Fifty gram portions of each were digested with 500 ml. of a freshly prepared solution containing 1 per cent pepsin and 0.7 per cent concentrated hydrochloric acid. The digestion was carried out in an incubator at 37 C. with constant stirring. After digestion was complete, the resultant suspension was poured through a 20-mesh brass screen into a funnel fitted with a rubber tube and pinchcock. After two hours or more the sediment in the funnel was drained off into a conical sedimentation glass; after another two hours 5 ml. or more of sediment was examined microscopically for Trichinella spiralis larvae. Sediments composed of dark, turbid material were washed by repeated settling, the supernatant being replaced with tap water. Microscopic examination was done with a binocular dissecting microscope at a magnification of 18.9 diameters by reflected light over a dark background. (It had been established that this method was as efficient as the search by transmitted light used by McNaught and Anderson and less fatiguing.) When present, the larvae were counted, successive portions of the digested mixture being taken until it was assured that continued sedimentation and sampling disclosed no more. In every positive specimen larvae were found in the first portion examined, subsequent portions showing decreasing numbers.

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Assistance in obtaining specimens for this study was given by Dr. Alvin J. Cox, professor, and members of the staff of the department of pathology, Stanford University Medical School, and by Drs. George Watson and J. A. Mathewson of the French Hospital of San Francisco.

[1] Queen, F. B.: The Prevalence of Human Infection with Trichinella Spiralis, J. Parasitol. **18**: 128 (Dec.) 1931.

[2] Wright, W. H.; Kerr, K. B., and Jacobs, L.: Summary of the Findings of Trichinella Spiralis in a Random Sampling and Other Samplings of the Population of the United States, Pub. Health Rep. **58**: 1293 (Aug. 27) 1943.

[3] Wright, W. H.; Jacobs, L., and Walton, A. C.: Epidemiological Considerations Based on the Examination for Trichinae of 5,313 Diaphragms from 189 Hospitals in 37 States and the District of Columbia, Pub. Health Rep. **59**:669 (May 26) 1944.

[4] McNaught, J. B., and Anderson, E. V.: The Incidence of Trichinosis in San Francisco, J. A. M. A. **107**: 1446 (Oct. 31) 1936.

[5] Brooks, T. J., Jr.; Ward, J. W., and Holder, T. M.: Studies on the Incidence of Trichiniasis in Mississippi: Preliminary Report, Am. J. Trop. Med. **28**: 863 (Nov.) 1948.

Specimens were not judged negative until all grossly visible sediment had been searched. From a technical standpoint this series is comparable to that of McNaught and Anderson without reservations.

RESULTS

Diaphragms from 161 autopsies performed between November 1949 and June 1950 were examined. Of these, 13 (8 per cent) contained trichina larvae. Encysted, shrunken larvae, appearing to be dead, were found in every positive specimen. In only three specimens were living, excysted larvae recovered. The number of larvae in each 50 Gm. of diaphragm ranged from one to 3,152; the median number was 115, and the average was 363. The age distribution of the subjects from whom the specimens were obtained and the distribution of positives by age is shown in the table. The incidence among men (9 per cent) was higher than that among women (6 per cent), but the difference is one that might readily occur by chance. There were 14 nonwhite bodies in the series, eight Negro, six Oriental; none of these showed trichinae.

Comparison of Trichinella spiralis Infections of Human Diaphragms in San Francisco in 1936 and in 1950

	1936, McNaught and Anderson				1950, Beard			
Age Group, Yrs.	Number Examined	% of Total	Number Infected	% Infected	Number Examined	% of Total	Number Infected	% Infected
1-24	10	5.0	0	..	12	7	1	..
25-39	27	13.5	4	..	20	12	1	..
40-74	139	69.5	37	..	112	70	9	..
75 +	24	12.0	7	..	17	11	2	..
	200	100.0	48	24	161	100	13	8

COMMENT

The apparent reduction by two thirds from the infection rate reported by McNaught and Anderson is quite unlikely to have been observed by chance alone. The difference (16 per cent) is four times its standard error (4 per cent).[6]

There are several possible sampling errors that might account for the observed difference. Age is one that might be most troublesome, since trichina infections are commoner with increasing years of life. As can be seen in the table, the two series are quite similar in this respect, as far as can be shown by the broad age groupings adopted in the earlier study.

Although McNaught and Anderson reported no sex difference, Wright et al.,[3] considering a much larger series, indicated infection rates of 16.7 per cent for men and 14.7 per cent for women, a difference that McNaught and Anderson considered insignificant. In the present series the rate for women is only 6 per cent, as compared with 9 per cent for men; although the numbers are too small for this difference to have statistical significance, it has to be considered a possible explanation for our lower infection rate for the sexes combined, as compared with McNaught and Anderson's observations, especially since the proportion of women in our material was 40 per cent, while it was only 30 per cent in the earlier work. However, when a statistical correction is made for the difference in sex distribution, the over-all incidence of 8 per cent is changed only in the second decimal place.

Consideration is also given to the possibility that the inclusion of a larger proportion of nonwhites in our material might be the reason for the lower infection rate. McNaught and Anderson did not mention the races of their subjects, and their original data are not available. However, we searched the autopsy protocols and succeeded in locating 37 of their 48 positive cases. We assumed that the autopsies in which there was no mention of trichinosis, performed between the dates of the first and the last of these positive cases, were representative of the negative cases in the McNaught and Anderson series. From these data we arrived at an estimate that Negroes and Orientals each represented 2 per cent of their cases. In our later series there are eight Negroes (5 per cent) and six Orientals (4 per cent). In neither series were any of the nonwhite specimens infected. When an allowance is made for the higher proportion of nonwhites in our series, the corrected infection rate is less than 9 per cent. Thus it can be safely said that the race factor did not contribute materially to the reduction in infections that appears between the two series.

An attempt was made to evaluate the possible effects of differences in the proportion of specimens coming from the several hospitals that contributed. However, we were unable to satisfy ourselves on this point. It can only be said that one of McNaught and Anderson's sources, an old peoples' home that contributed substantially to their material, was absent from our later series. Had material from this source been included in our series the percentage of positives would probably have been higher, but this difference would have been wiped out when a correction was made to put the two series on the same age distribution basis. Such a correction would have been necessary, since the two series now match each other closely.

The thesis that infections by Trichinella spiralis have been materially reduced in San Francisco is further supported by the fact that only three of our 13 positives had living larvae, while McNaught and Anderson found living larvae in every specimen. As has been pointed out by Wright, Jacobs and Walton,[3] little is known concerning the rapidity with which larvae die and begin to disintegrate or calcify. They cite reports of trichinae living in human beings for 19 to 26 years, but in none of these could the possibility of reinfection be ruled out. They also cite a report by Dammann[7] on the survival of larvae within the muscle tissue of a hog that had been infected more than 11 years previously and that was subsequently maintained in an environment that excluded reinfection. They further state that they found dead larvae in three out of four infections in persons in the age group of 5 to 9 years and mixed living and dead larvae in the fourth subject of this group, indicating that trichinae are not long-lived in all cases. We may add to this our observation of none but dead larvae in a child aged 4. The high proportion of dead larvae that we have observed suggests that some, perhaps many, of the infections that we discovered were acquired long ago, before the initiation of the trichina control measures and educational programs referred to earlier.

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[6] $S_{p_1 - p_2} = \sqrt{\frac{p_o q_o}{n_1} + \frac{p_o q_o}{n_2}}$ $p_o = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2}$

[7] Dammann, C.: Zur Frage der Lebensdauer unter Verkapselung der Trichinen bei dem Schweine, Deutsche Ztschr. Thiermed., 3:92 (Nov.) 1876; Cited by Wright, Jacobs and Walton.[3]

We found larger numbers of larvae in our positive specimens than did McNaught and Anderson. They state that they found fewer than 20 larvae in each 50 Gm. of diaphragm muscle in 79 per cent of their subjects, between 20 and 100 larvae in 12.5 per cent and more than 100 in 8.5 per cent. We found fewer than 20 in 31 per cent of our positive specimens, from 20 to 100 in 15 per cent and over 100 in 54 per cent.

CONCLUSION

It appears that there has been a real reduction in Trichinella spiralis infections in San Francisco. Three factors would appear to be responsible for this, though their relative importance cannot be evaluated.

Federal, state and local regulations that assure adequate processing of pork products intended to be eaten without cooking have undoubtedly played a large part, since many of the clinical cases have been traced back to these foods. The U. S. Department of Agriculture has recently reported[8] that surveys of ready-to-serve pork products prepared under federal meat inspection regulations have shown no infective larvae in a countrywide sampling conducted from July 1948 to December 1949. Continued vigorous enforcement of processing regulations and their enactment and use in local areas where they are not in effect is necessary.

A reduction in the proportion of pork from garbage-fed hogs sold in San Francisco is a second factor. Wartime scarcity of labor, difficulties of transportation and other factors made feeding garbage to hogs relatively unprofitable, and many local establishments of this kind went out of business. There are none at present in San Francisco County. It is also said by persons well acquainted with the meat-packing industry[9] that garbage-feeding is less satisfactory than it was because of the lower quality garbage presently obtainable, and that the preparation of grain-fed pork has increased. There is evidence in the Department of Agriculture report that the reduction of infections in hogs is widespread, for only 0.81 per cent of the pork product specimens was found to contain killed larvae in the 1948-1949 samples, as compared with an infection rate of 3.32 per cent in the period March 1934 to August 1939. While we have no evidence that garbage-feeding of hogs is again increasing, it would seem to be a good time to establish regulations requiring the cooking of garbage used for this purpose against the day when the practice might be resumed on a wider scale.

Public education on the necessity of the thorough cooking of pork must have played some part, and this should be continued. The lessening incidence of the infection of hogs and the reduction of clinical cases of trichinosis, which may be observed in other places as well as in San Francisco, should not be accepted as the justification for neglecting this phase of health education. The possibility of obtaining meat from an occasional heavily infected hog still remains and will remain despite the application of any reasonably practical control measures; the risk of death and of severe disability will, therefore, still persist, but this risk can be reduced to nothing if people will insist on the thorough cooking of fresh pork.

SUMMARY

Fifty gram portions of diaphragms from 161 unselected autopsies done in San Francisco between November 1949 and June 1950 were examined for larvae of Trichinella spiralis by digestion with pepsin and hydrochloric acid. Thirteen (8 per cent) contained parasites. This contrasts with the finding of 24 per cent in a series of 200 autopsies, studied by the same method, reported by McNaught and Anderson in 1936. This is attributed to the lessened use of garbage-fed pork, more stringent regulation of the production of ready-to-serve pork foods and public education on the necessity of cooking pork.

ABSTRACT OF DISCUSSION

Dr. Frank B. Queen, Portland, Ore.: This is the first time that a repeat study has been made in the same territory and city utilizing the same methods by which a previous study was made. Studies of the incidence of trichinosis beginning about 1933 in various parts of the United States give a good cross section of incidence, with an average of about 16 per cent infection. The highest found was 36 per cent (Cleveland). Beard's study shows a reduction in the incidence of trichinas infection in San Francisco since McNaught's study in 1936 of 24 per cent to eight per cent. The question arises whether or not this reduction indicates a true reduction of trichinosis infection, or is it simply within the variations of biological studies? One cannot answer this with certainty, though I believe that it well may be the latter. In St. Louis there was a 5 per cent infection rate found in 1891 but a percentage of 15.4 in 1937, when a more extensive study (using a different method) was made. In 1936 in New Orleans, 3.5 per cent infection was found, though three years later another study showed exactly twice that amount. These studies were technically comparable. I believe that these changes are due to chance variations among the persons studied, and that Beard's results may be due to this and not to the fact that the incidence of trichinas infection in San Francisco has truly dropped from 24 per cent to 8 per cent during the past 14 years. By age groups in large series, trichinosis infections are found in ages 10 to 29, 4 per cent; 30 to 39, 12 per cent, and 40 to 49, 17 per cent, while the maximum of 25 to 35 per cent is found after age 50. Thus, even had trichinosis been completely controlled in San Francisco after McNaught's study 14 years ago, such control would not yet account for the reduced infection rate of 8 per cent now found and particularly since but 12 (7 per cent) of Beard's cases were under 24 years of age. I believe that it is not a matter of a decrease in trichinosis but a matter of sampling giving a possible erroneous interpretation. But there is no way to know this except through continued studies like this one.

Dr. Richard D. Friedlander, San Francisco: I do not believe that the present methods of approaching the trichinosis problems are adequate. This paper has been concerned with spot checks on human diaphragms; I do not believe that the primary interest of the medical profession is in the number of larvae in the diaphragms of dead people. By skin-testing swine for trichinosis, a specific measure, the differentiation of swine showing positive tests comparable to that done in tuberculous or brucellous cows, one might provide a solution to the eradication of trichinosis, i. e., either slaughter or at least detection of such swine. This involves an economic problem. The public health status of this problem has changed little since the same point was raised eight years ago when McNaught presented a similar paper.

Dr. Elmer W. Smith, Stockton, Calif.: A question came to mind when Beard mentioned the cooking of garbage. While I was at St. Mary's Hospital in this city a South San Francisco physician brought blood from 31 patients into the laboratory. The blood showed one incidence of over 15 per cent eosinophilia. One of these patients died of severe trichinosis. I did an autopsy examination and found serious lesions in the heart, gallbladder, diaphragm and skeletal muscles. Tissues were sent to Dr. McNaught who, by the digestion method, found over 1,000 organisms to each gram of diaphragm muscle. Now, in attempting to uncover the source, my colleagues and I found that a group of people in the Italian section of South San Francisco were pooling their garbage and raising hogs. Quite an epidemic developed in the area. Now if the garbage had been boiled this problem would not have changed, because there is the problem of rats getting into the hog yards. Rats, being common carriers of Trichinella and also being cannibal, carry the infection from rat to rat. It is thus easy to see how the hogs became infected by catching and eating rats. Some of the raw Italian sausage was submitted to me, and it was found to be teeming with living Trichinella. These were given to Dr. Naught for evaluation. Therefore, the problem of rat population should be of important concern for the public health department.

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[8] United States Department of Agriculture, Agricultural Research Administration, Washington, D. C., Press Release, April 12, 1950.

[9] Forbes, E. F., and Wahn, A. J.: Personal communications to the author.

Dr. R. R. Beard, San Francisco: In response to Queen, I believe that his comments are really important when he can describe two towns in which repeated surveys have been done under similar conditions and get such different variations. I can only offer statistics compiled by my colleagues and myself, which show that our difference is some four times the standard error, and I think it is unlikely that that is a chance occurrence. However, all I can do is to get a longer series, as Queen has said. In answer to Friedlander, I too have been attracted by the idea of testing hogs, but it is my understanding that skin-testing in hogs is not simple, nor yet a reliable procedure, and unfortunately serum hog-testing isn't too good either. Of course, if infected hogs could be destroyed, or if the meat from hogs that are thought to contain Trichinella could be treated by freezing, that might take care of the problem. The rat control approach to this problem has been mentioned frequently in the past, as it certainly should be on general grounds. However, rat control alone is by no means a reliable means of management. Rat control should be a part of the program in every community.

CLINICAL NOTES

ALCOHOL AND VIOLENT DEATH

A ONE YEAR STUDY OF CONSECUTIVE CASES IN A REPRESENTATIVE COMMUNITY

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In 1941 Gonzales and Gettler[1] reported a study on alcohol and the pedestrian in traffic accidents in New York City. They disclosed that 30.7 per cent of the pedestrians killed in traffic accidents were under the influence of alcohol. Gonzales, Vance and Helpern[2] have stated that alcohol was a contributory or responsible factor in approximately 40 per cent of all violent deaths that came under their jurisdiction in the Medical Examiner's office of New York City. Since then the problem of alcohol in relation to violent death has intensified. Despite this, many observers have tended to underestimate the significance of these previously mentioned findings because it has been claimed that the cases were not consecutive in most of these studies or that the cases were drawn from areas not typical of the county or population as a whole. Although it has been indicated that alcohol is a contributory factor in a significant percentage of other forms of violent death, most of the previous studies have been concerned with the role of alcohol in traffic fatalities.

Table 1.—*Violent Deaths Classified According to Alcoholic Content of Brain or Liver*

Type of Death	Total No. of Cases	Cases in Which Alcohol Is in Liver or Brain		Average Alcoholic Content of Brain or Liver, %	Range of Alcoholic Content in Liver or Brain, %
		No.	%		
Suicide	78	15	19	0.15	0.02-0.29
Nonindustrial accidental deaths	82	20	24	0.18	0.06-0.3
Homicides	8	7	87	0.18	0.11-0.27
Automobile fatalities	78	36	46	0.15	0.08-0.25
Totals	246	68	27	0.16	0.02-0.3

It is the purpose of this report to present the results of a one year (1949) study of the role of alcohol as a factor in all forms of violent death in a typical community with a population of approximately 600,000, in which there are several small cities, towns, villages, suburban and semirural areas. During this period practically every one who had died a violent death in the entire community was necropsied and the liver or brain analyzed for ethyl alcohol content. Necropsy was foregone only when it was absolutely clear that no alcohol was involved, when 24 hours had elapsed between the time of the accident and death and when circumstances beyond our control were present. In most instances death was almost instantaneous. The ethyl alcohol determinations therefore tended to approximate the exact state of the person at the time of accident or violent death. In each case, depending on the circumstances, either the brain or the liver was used for the ethyl alcohol determination. The method of Gettler and Tiber[3] was employed.

During the period of study approximately 500 cases were handled by this office. Two hundred and forty-six of the 500 cases were classified either as homicidal, suicidal or nonindustrial accidental death. All these have been included in this study. Thus, there was no selection of cases whatsoever. Of these, there were 78 suicides, 82 nonindustrial accidental deaths of adults, eight homicides and 78 traffic fatalities of which 13 were pedestrians and 65 driver or passenger. The incidence of passenger and driver deaths was greater than that of pedestrian deaths. This is in contrast to what occurs in a large city where the pedestrian deaths outnumber the car occupant deaths. The accompanying table presents the type of violent death, the number of persons in each classification, the number with positive ethyl alcohol

Table 2.—*Classification of Alcohol Cases*

	Alcoholic Content of Brain, %
Trace	0.005-0.02
1 plus	0.02 -0.10
2 plus	0.10 -0.25
3 plus	0.25 -0.40
4 plus	0.40 -0.60

From the Office of the Medical Examiner, The Department of Laboratories and Research of Westchester County.

[1] Gonzales, T. A., and Gettler, A. O.: Alcohol and Pedestrian in Traffic Accidents, J. A. M. A. **117**: 1523-1525 (Nov. 1) 1941.

[2] Gonzales, T. A.; Vance, M., and Helpern, M.: Legal Medicine and Toxicology, New York, Appleton-Century-Crofts Company, Inc., 1937, p. 529.

[3] Gettler, A. O., and Tiber, A.: Quantitative Determination of Ethyl Alcohol in Human Tissues, Arch. Path. **3**: 75-83 (Jan.) 1927.

determinations in the brain or liver, the average alcohol content for those with positive determinations in each group and the minimum and maximum alcohol content in those with positive determinations in each group (table 1). Also included for reference is a table classifying cases according to amounts of alcohol recovered quantitatively in the brain [2] (table 2).

It may be noted that most of the cases in this report are in the 1 plus and 2 plus categories; these are the levels where, on casual examination, the persons may not appear to be under the influence of alcohol. Careful tests and studies, however, indicate that these are the persons most prone to get into trouble because their reflex actions, coordination and sense of judgment are impaired and yet they can get around and do not realize the extent of impairment. The persons in the 3 plus and 4 plus categories are obviously intoxicated and are often too far gone to get into serious trouble.

Ethyl alcohol as an immediate precipitating factor in the act of committing suicide was present in 15 (19 per cent) of the 78 suicides; of these, eight were men and seven, women, respectively. Whether or not the alcohol was used to dull the senses so that the original intent of committing suicide might be pursued or whether or not the alcohol accentuated whatever depression was already present is difficult, of course, to ascertain. The presence of alcohol in this group very often makes it extremely difficult to render an accurate decision in these cases—that is, whether the death is an accident or a suicide.

There were 82 nonindustrial accidental deaths in adults, and of these persons, 20 (24 per cent) were under the influence of varying degrees of alcohol. Among these accidents were examples of pots boiling over on the stove and causing asphyxiations by illuminating gas, fires in bed, falls, drownings and asphyxiations as a result of inspiration of large pieces of food. These persons represented all segments of the community, all classes and economic levels and varied occupations.

Seven of the eight acts of homicide were committed while the persons involved were under the influence of rather large quantities of alcohol. Investigation revealed that in practically all instances there was no obvious premeditation or malicious intent. Very often after the influence of the alcohol had subsided there was no real recollection of what had occurred. These homicides consisted of stabbings, beatings, etc.

Automobile fatalities present perhaps the most serious problem. It is in this field that the controversy rages as to the quantity of alcohol in the blood necessary to produce sufficient impairment of efficiency and to act as a contributing or responsible factor in a traffic fatality. In a recent careful and well documented study in Sweden by Bjerver and Goldberg,[4] it was found that an alcoholic level in the blood of 0.04 to 0.06 per cent reduced driving efficiency by at least 25 to 30 per cent. In their tests they utilized only expert drivers. These investigators believe that the threshold levels of alcohol in the blood above which efficiency is significantly impaired is 0.035 to 0.04 per cent. In 1938, in a study on auto drivers in the region of Chicago, Holcomb [5] found that 47 per cent of 270 drivers involved in accidents were under the influence of alcohol, whereas only 12 per cent of 1,760 drivers picked up at random were under the influence of alcohol. He also concluded that when the alcoholic level in the blood was 0.1 per cent accidents were four to six times as frequent, and at a 0.15 per cent level accidents were 25 times as frequent.

Of the 78 traffic fatalities in this report, again all economic levels, all groups and all occupations were represented. For the most part, the persons involved were not chronic alcoholics but people who had been drinking at a cocktail party, a tavern, a wedding or a holiday celebration.

All the figures on alcohol presented here are minimal figures. Alcoholic levels in the brain or liver are lower than the level obtained in the blood. In some instances the persons died several hours after the accident or other form of violent death had occurred, so that the determination at the time of postmortem examination was considerably lower than it most likely was at the time of the accident.

This entire problem assumes added significance when it is recalled that in the age group of 15 to 45, the prime of life, two of the five leading causes of death in the entire nation are traffic fatalities and accidental deaths other than traffic fatalities.

SUMMARY

A one year study in a typical community revealed that ethyl alcohol was a contributing or responsible factor in 68 (27 per cent) of 246 consecutive cases of violent death.

ACUTE FULMINATING HODGKIN'S DISEASE

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and
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Since Thomas Hodgkin [1] in 1832 first described seven cases of common lymph node and spleen enlargement and cachexia terminating fatally, a voluminous literature about the nature and etiology of this disease has accumulated. The most recent and complete review of this subject is that of Hoster and Dratman.[2] Acute cases of Hodgkin's disease are rare. Cunningham [3] found three cases; one was of six weeks' duration. Sternberg [4] collected a number from the literature in which the duration was from eight days to several weeks. Harrell [5] cited a case that was characterized by much pus formation and necrosis with very little fibrosis.

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[4] Bjerver, K., and Goldberg, L.: Effects of Alcohol Ingestion on Driving Ability: Results of Practical Road Tests and Laboratory Experiments, Quart. J. Stud. on Alcohol **11**: 1-30 (March) 1950.

[5] Holcomb, R. L.: Alcohol in Relation to Traffic Accidents, J. A. M. A. **111**: 1076-1085 (Sept. 17) 1938.

From Kanawha Valley Hospital, Charleston, W. Va.

[1] Hodgkin, T.: On Some Morbid Appearances of the Absorbent Glands and Spleen, Tr. Med.-Chir. Soc. Edinburgh **17**: 68-114, 1832.

[2] Hoster, H. A., and Dratman, M. B.: Hodgkin's Disease (Part I) 1832-1947, Cancer Research **8**: 1-48, 1948.

[3] Cunningham, W. F.: Hodgkin's Disease: A Study of a Series of 25 Cases, Am. J. M. Sc. **150**: 868-886, 1915.

[4] Sternberg, C.: Lymphogranulomatose and Reticuloendotheliose, Ergebn. d. allg. Path. u. path. Anat. **30**: 1-76, 1936.

[5] Harrell, G. T.: Hodgkin's Disease with Invasion of Pericardium and Gall Bladder, Arch. Path. **28**: 58-64, 1939.

Gilbert[6] analyzed the clinical course of 77 patients and made the following classification of cases: (1) those with an average rate of development (60 per cent), (2) those of slow evolution (20 per cent), (3) a rapid form in which death results within months and (4) the acute form (rare). These acute cases may run their complete course during a period of a few weeks with a high fever and rapid spread suggesting septicemia. In some, all the lymph nodes seem to enlarge at the same time. In this report no actual cases were described. In view of the apparent rarity of this form of Hodgkin's disease, the following case is reported.

REPORT OF CASE

A 16 year old male was admitted to the hospital Dec. 30, 1949, complaining of chest pain and cough of three days' duration. He had been well until he began to have fever, generalized aching, pain in the right lower portion of the chest, shortness of breath, unproductive cough, anorexia and occasional vomiting unrelated to meals. The family history was noncontributory. Two weeks prior to this illness, the patient was tattoed over the anterior aspect of the left forearm. This was followed by redness, swelling and tenderness, lasting about three days. Physical examination revealed a well developed, well nourished, acutely ill, white male. The temperature was 101 F., pulse 120 per minute, respirations 30 per minute and blood pressure 100/80. The findings otherwise were not remarkable, except for a pleural friction rub in the midaxillary line of the right lower portion of the chest. The clinical diagnosis was acute fibrinous pleurisy of the base of the right lung.

The red blood cell count was 5,040,000, with 97 per cent hemoglobin, and the white blood cell count was 15,750. The differential count was neutrophils 58 per cent, band cells 8 per cent, lymphocytes 30 per cent, monocytes 1 per cent, eosinophils 2 per cent and basophils 1 per cent. Results of urinalysis were essentially normal. Results of agglutination tests with typhoid, paratyphoid, Proteus 0X19 and 0X2, Brucella Abortus and B. tularense antigens were negative on two occasions. Results of the Mazzini and Hinton tests were negative. Sputum concentration examinations were negative for tubercle bacilli. The heterophil antibody reaction was negative. Blood cultures were negative. X-ray examination of the chest was considered normal on repeated examinations.

The patient ran a septic type of fever that ranged between 100 and 105 F., and there was a progressive evidence of toxemia. Five days after admission, he had severe bilateral chest pain, tachypnea and pleural friction rubs bilaterally over the lung bases. The liver was slightly palpable and tender. Splenic enlargement was noted on percussion, but the organ was not palpable. The conjunctivas were injected, and the scleras were slightly icteric. There was generalized adenopathy. The nodes measured from 0.5 to 1 cm. in diameter; they were discrete and nontender. A clinical diagnosis of acute Hodgkin's disease was considered. A lymph node biopsy specimen was obtained from the right axilla, and the pathological diagnosis was Hodgkin's disease.

On January 5, the hemoglobin was 75 per cent, red blood cell count 3,700,000 cells and the white blood cell count was 37,150. The differential count showed lymphocytes 15 per cent, monocytes 29 per cent, neutrophils 23 per cent, band cells 31 per cent and eosinophils 2 per cent. The urine showed an increased amount of urobilinogen, and the blood van den Bergh reaction was 1.2 mg. direct and 2.8 mg. indirect, per 100 cc. The Hanger liver function test showed 4 + at 24 and 48 hours. On January 6, the liver and spleen were definitely larger, the jaundice deepened and the glandular enlargement became more prominent. The patient became confused and delirious. Despite multiple transfusions, the anemia progressed and the white blood cell count rose to 58,900. On January 8, there was intense jaundice, marked hepatosplenomegaly and generalized purpura. The course was rapidly downhill, and the patient died Jan. 11, 1950, 12 days after admission and 15 days after the onset of the illness.

Autopsy Findings.—The body was that of a well developed, well nourished, white male who was moderately icteric and appeared to be about 17 years of age. There was a tattoo on the left forearm. The right axilla showed a recent surgical incision. The peritoneal cavity contained about 500 cc. of a deep yellow fluid. Each pleural cavity contained 200 cc. of a similar fluid. The pericardial sac was not abnormal. The heart weighed 280 Gm. and showed cloudy swelling of the myocardium and an old healed verrucous endocarditis of the aortic valve. The lungs showed edema, passive hyperemia and foci of acute bronchopneumonia. The liver weighed 2,000 Gm.; it was semifirm and was yellow on section. The acinar markings were distinct. The gallbladder and extrahepatic bile ducts revealed no gross abnormalities. The spleen weighed 500 Gm. It was firm and on section was purple-red and contained numerous gray-white opaque areas, measuring up to 0.5 by 0.4 by 0.2 cm. The suprarenal glands weighed 10 Gm. together and showed a diminution of cortical lipoid. The kidneys weighed 300 Gm. together and showed pronounced passive hyperemia. The renal pelvises were pink-gray and smooth and showed petechial hemorrhages. The urinary bladder, prostate gland and seminal vesicles were normal. The mucosa of the stomach and small and large intestines showed petechial hemorrhages. The axillary, mediastinal, perigastric, mesenteric and para-aortic lymph nodes were enlarged up to 3 by 2 by 2 cm. They were discrete, semifirm and on section showed a uniform gray surface, more opaque than normal and bulging. The rib and sternal marrow was red. Permission was not granted for examination of the brain.

Microscopic Examination.—The lesions of Hodgkin's disease were found in the lymph nodes, liver, spleen and kidneys. These were characterized by loss of architecture, foci of necrosis, Sternberg-Reed cells, pleomorphism and the infiltrations of lymphocytes, plasma cells, eosinophils and polymorphonuclear leukocytes. Fibrosis was not seen. The liver showed Hodgkin's granuloma extending into the lobules from the periportal areas. The liver cells showed cloudy swelling and fatty metamorphosis. In the kidneys there were focal areas of Hodgkin's granuloma in the cortex with disappearance of the nephrons.

The pathological diagnosis was acute fulminating Hodgkin's disease with hepatomegaly, splenomegaly, involvement of kidneys and axillary, mediastinal and abdominal lymph nodes; icterus; ascites and bilateral hydrothorax; edema of the lungs; bilateral acute basal bronchopneumonia; petechial hemorrhages in the mucosa of the gastrointestinal tract and renal pelvises, and old healed verrucous endocarditis of the aortic valve (rheumatic in type).

COMMENT

The majority of cases of Hodgkin's disease are said to progress through three stages[7]: (*a*) a period of latency, during which the nodes are enlarging without symptoms, (*b*) a period of progression and generalization, during which symptoms of varying severity appear, and (*c*) a period of cachexia, which precedes the death of the patient. In the fulminating case, the stages rapidly merge, without any apparent sequence of events, and all the symptoms make their appearance at the start.

Attempts have been made to divide Hodgkin's disease into various categories according to its microscopic characteristics. Jackson and Parker[8] describe three types, the paragranuloma, the granuloma and the sarcoma. They stated, however, that transition forms may occur that are difficult to classify. Furthermore, the more benign forms (paragranulomas) may undergo transitions toward the more malignant forms, while the reverse is not true. Such a histological classification does not seem justified, because a single group of lymph nodes may show all the variants of the pathological picture. There is no pathological basis for a clinical division into acute and chronic forms, since both exhibit the same morphological changes but with a different chronological spacing.

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[6] Gilbert, R.: Radiotherapy in Hodgkin's Disease, Am. J. Roentgenol. 41: 198-241, 1939.

[7] McCausland, D. J. M.: Hodgkin's Disease in Children, Arch. Dis. Childhood 16: 59-62, 1941.

[8] Jackson, H., Jr., and Parker, F., Jr.: Hodgkin's Disease: II. Pathology, New England J. Med. 231: 35-44, 1944.

The blood changes in Hodgkin's disease vary with the type and the stage of the disease.[9] In the advanced stages there is progressive anemia, either from hypoplasia of the marrow or from development of the Hodgkin's disease in the marrow cavity. The anemia is usually of the hypochromic type, and the platelets are usually increased in number. Early in the disease the white blood cell count may be normal, slightly decreased or slightly increased. Occasionally, the leukocyte count may rise to 50,000 or over 100,000 per cubic millimeter. The leukocytosis is neutrophilic in type and occasionally eosinophilic. A definitely elevated white blood cell count in Hodgkin's disease is said to indicate that the disease is widely disseminated. With the progress of the disease the lymphocytes decrease in number to low levels and the monocytes may be increased. About 50 per cent of patients with Hodgkin's disease die in the toxic state attending multiple visceral invasion or terminal disease associated with secondary infection.[10] Although this is encountered more often in the acute cases, in many of the chronic forms symptoms of acute toxemia may suddenly develop, and the patient may die.

SUMMARY

A case is presented of acute fulminating Hodgkin's disease, characterized by pronounced toxemia, generalized lymph node enlargement, hepatosplenomegaly, jaundice and purpura.

SUICIDE FOLLOWING CORTISONE TREATMENT

M. C. Borman, M.D., Milwaukee
and
H. C. Schmallenberg, M.D., New London, Wis.

The mental and psychic effects of cortisone and pituitary adrenocorticotropic hormone (ACTH) have been observed almost from the initial use of these two drugs in man. A state of euphoria is very commonly observed during the course of the drug administration. More serious abnormal behavior has been observed, however, and as a result it has been suggested that the drugs be used cautiously or not at all for patients who have had previous mental difficulties. The literature on these drugs states that latent mental abnormalities may flare up with the use of these drugs.

The following case is reported because suicide occurred during the use of cortisone by a patient who had experienced no previous mental difficulties. On the contrary, she was greatly pleased with her progress, and she obtained a satisfactory remission of her rheumatoid arthritis.

REPORT OF CASE

Mrs. L. H., a housewife aged 53, complained of arthritis of 25 years' duration, beginning in the feet and gradually involving all other joints. The joints had become swollen and red in the early stages, but not recently. There had been marked difficulty in walking because of the pain. There had been blurring of the vision of the right eye due to an old iritis. There were no other symptoms referable to the respiratory, gastrointestinal, cardiovasculorenal, endocrine, central nervous, genitourinary or skeletomuscular systems.

On physical examination, the general nutrition appeared fair. The right pupil was constricted and irregular, reacting only slightly to direct light. The left pupil was normal. The visual fields were normal. The nose and throat were normal. There were four remaining lower teeth, which were in good repair. The thyroid gland could not be felt. There were no nodes felt in the neck, groins or axillas. The breasts were normal. The lungs were clear throughout. There was no heart enlargement, arrhythmia or murmur. Blood pressure was 142/80. The abdomen was scaphoid, without tenderness, spasm or masses. Liver, kidneys and spleen could not be felt. Motion was extremely limited and painful in the left hip. The knees were considerably enlarged, with marked crepitation. The range of flexion was normal, but extension was limited to about 165 degrees in both knees. The hips and ankles appeared normal. A 3 plus curling of the toes was present. The patient was unable to comb her hair because of soreness and limitation of motion in the shoulders and elbows. The wrists were deformed, were in good position, and had a motion range of 5 degrees hyperextension and 10 degrees flexion. There were typical fusiform deformities of the proximal interphalangeal joints.

The ophthalmological examination showed that her right pupil was round, was 3 mm. in diameter and reacted slowly, apparently owing to adhesions at the iris margins; the anterior chamber was slightly shallow. The left pupil was 4 mm. in diameter and reacted normally. After dilatation of the pupils, it was apparent that the right pupil was bound down by posterior synechiae. The tension was normal. A cataract was present. It was impossible to determine with the biomicroscope whether there were any floating capacities in the aqueous. The fundus could not be seen. On the left side, the pupil was almost round and slightly flattened above; the media were clear, the nerve head and macula, normal. Vessels showed a 1 + crossing, with a normal fundus.

Her blood count revealed a hemoglobin content of 11.8 Gm.; 4,200,000 red blood cells; 6,200 white blood cells; 5 per cent nonsegmented and 55 per cent segmented neutrophils; 31 per cent lymphocytes; 11 per cent monocytes; 2 per cent eosinophils. The sedimentation rate was 100 mm. in one hour. The eosinophil count revealed 131 eosinophils per cubic millimeter. The results of urinalysis were as follows: specific gravity, 1.014; color, light; sediment, cloudy; reaction, slightly alkaline; sugar, 0, albumin, 30 mg. per 100 cc.; no acetone, loaded with bacteria. The blood potassium level was 3.46 mg. per 100 cc.

X-ray examination of hands and hips showed considerable soft tissue swelling and bone atrophy, with hypertrophic degenerative changes in the proximal line of both wrists; a study of the right hip showed no abnormalities; a study of the left hip, however, revealed degenerative changes with narrowing of the joint space and irregularity of the head of the femur and the acetabulum. Considerable eburnation and deepening of the acetabulum had taken place.

Course in Hospital.—The patient remained in the hospital from Aug. 25 to Sept. 23, 1950. She received during that time a total of 2.625 Gm. of cortisone. By September 3 there had been marked improvement. She still complained of pain in the left hip, thigh and knee on change of position, and of some pain in the right shoulder. There was considerable recession of the swelling, but there was still some residual pain on active motion in all the joints. On September 15 there was evidence of continued improvement of motion of the left hip and left knee, in which motion was now unrestricted. The patient had begun walking. On the date of her discharge, September 23, the patient's sedimentation rate was 21 mm., she was walking about, happy, and was sent to her family physician with instructions that she receive 100 mg. of cortisone biweekly.

She was in excellent spirits when she returned home, although nervous, restless and sleeping poorly. Her husband and daughter, on returning from a fire down the street, found her "wild eyed, hysterical and screaming that "the devil was after her." The pastor was called, and he succeeded in quieting her. One of us saw her at 10:30 p. m., and sedation was prescribed. She said she needed a doctor for her soul, not a medical doctor. The family was advised never to leave her alone, but on the same day, while her daughter was dressing, the patient cut her throat with a straight-edged razor and died within five minutes.

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[9] Isaacs, R.: Hodgkin's Disease, M. Clin. North America 28: 201-213, 1944.

[10] Cohn, S., and Richter, M.: Modern Views of Hodgkin's Disease, M. Rec. 148: 243-246, 1938.

From Columbia Hospital and the Marquette University School of Medicine, Milwaukee.

COMMENT

This patient's family history was essentially negative for depression. Her mother, aged 78, and father, aged 88, are living and well. She was one of five children. A brother died at 24 from carcinoma of the prostate. A sister prior to thyroidectomy for thyrotoxicosis was depressed and irrational but improved after surgery. A brother and another sister are living and well. All siblings had a history negative for mental disturbance, except as noted above. The mother and husband vouch for the absence of previous depression or nervousness. The patient had always been a quiet, normally religious woman.

To reason that the patient's mental disturbance was the result of the use of cortisone may be a *post hoc, ergo propter hoc* fallacy. But the evidence is strong that cortisone was responsible for her suicide, and if this is true, physicians must be alert to such a possibility in similar instances, especially now that the tablet form of cortisone can be purchased at the corner drug store.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

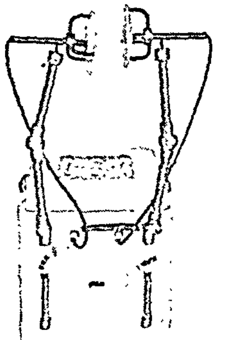
The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

HOWARD A. CARTER, *Secretary.*

HANOVIA MEDICAL DIATHERMY, 27.12 MEGACYCLES, ACCEPTED

Manufacturer: Hanovia Chemical & Mfg. Company, 100 Chestnut Street, Newark 5, N. J.

The Hanovia Medical Diathermy, 27.12 Megacycles, is a generator of short wave diathermy for application by air spaced electrodes, electro-induction cable, drum applicators, and electrodes for minor surgery. Operating from a source of 60 cycle alternating current at 110 or 220 volts, it is designed to produce a wavelength of 11.03 meters free from harmonics and spurious radiations. It bears Type Approval No. D-523 of the Federal Communications Commission. It draws 1,200 watts.



Hanovia Diathermy No. 27300B

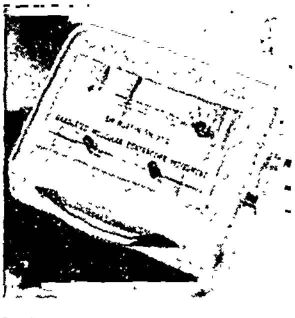
The apparatus is housed in a cabinet that rolls on the floor on casters. It stands 97 cm. (38 inches) high and weighs 92.5 Kg. (206 lb.). For shipment it makes a package measuring 116 by 70 by 67 cm. (41½ by 27½ by 26½ inches) and weighing 141 Kg. (310 lb.). The foreign shipping weight is 141 Kg. (310 lb.).

Evidence from a laboratory acceptable to the Council showed that the apparatus was sound in construction and dependable in operation. The Council on Physical Medicine and Rehabilitation voted to include the *Hanovia Medical Diathermy, 27.12* Megacycles, in its list of accepted devices.

SIR MORTON SMART'S GRADUATED MUSCLE CONTRACTION UNIT ACCEPTED

Manufacturer: General Electric X-Ray Corporation, 4855 West Electric Avenue, Milwaukee 14.

Sir Morton Smart's Graduated Muscle Contraction Unit is a device intended to stimulate human muscles in the treatment of certain disorders of muscles, nerves and joints. It is about the size of a portable typewriter, can be carried by a handle and set on a table, and is plugged into any outlet for 60 cycle alternating current at 115 volts.



Sir Morton Smart's Graduated Muscle Contraction Unit

The over-all dimensions of the unpacked article are 30.5 by 37 by 16 cm. (12 by 14½ by 6¼ in.) and it weighs 5.9 Kg. (13 lb.). Packed for shipment it makes a package measuring 33 by 42.5 by 20 cm. (13 by 16¾ by 7¾ in.). The domestic shipping weight is 7.7 Kg. (17 lb.); the foreign is 22.5 Kg. These shipping weights include the following accessories: 1 felt disk electrode 38 mm. (1½ in.) in diameter; 1 button type disk electrode 13 mm. (½ in.) in diameter; 1 dispersive electrode, 15 by 20 cm. (6 by 8 in.); 1 handle for disk electrode; and 1 set of paired electrode cords.

Evidence was obtained from sources acceptable to the Council that this device was a satisfactory generator of faradic current.

The Council on Physical Medicine and Rehabilitation voted to include the Sir Morton Smart's Graduated Muscle Contraction Unit manufactured by the General Electric X-Ray Corporation in its list of accepted devices.

MICROTONE ADC AUDIOMETER, MODEL 53-A, ACCEPTED

Manufacturer: The Microtone Company, Ford Parkway on the Mississippi, St. Paul 1.

The Microtone ADC Audiometer, Model 53-A, is a portable pure tone audiometer. The audiometer requires a source of alternating current at 60 cycles and 115 volts. It draws 30 watts, corresponding to 0.3 ampere. It weighs 7.5 Kg. (16 lb.) and measures 25 by 23 by 33 cm. (10 by 9 by 13 in.). When packed for shipment it makes a package measuring 30 by 28 by 39.5 cm. (11¾ by 11 by 15½ in.) and weighing 9.5 Kg. (21 lb.). The foreign shipping weight is the same.

Satisfactory evidence was obtained that this device satisfied the requirements formulated for screening audiometers without bone conduction receivers by the Advisory Committee on Audiometers and Hearing Aids.

The Council on Physical Medicine and Rehabilitation voted to include the Microtone ADC Audiometer, Model 53-A, in its list of accepted devices.

OTARION HEARING AID, MODEL G-1, (WHISPERWATE), ACCEPTED

Manufacturer: Otarion, Inc., 159 North Dearborn Street, Chicago 1.

The Otarion Hearing Aid, Model G-1, (Whisperwate) is a conventional electric hearing aid. Its external dimensions, exclusive of clips, control wheel, etc., are 62 by 46 by 22 mm., and the transmitter unit without batteries weighs 62 Gm. It operates on an A-battery at 1.25 volts and B-battery at 15.0 volts. It is provided with a magnetic air conduction receiver. A single control adjusts volume and tone at the same time, so that as the output increases the low tones increase relatively to the high tones. The Council on Physical Medicine and Rehabilitation voted to include the Otarion Hearing Aid, Model G-1, (Whisperwate) in its list of accepted devices.

MEDICAL LICENSURE STATISTICS FOR 1950

FORTY-NINTH ANNUAL PRESENTATION OF LICENSURE STATISTICS BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., Secretary, and Anne Tipner

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Statistical compilations regarding medical licensure are presented annually in the State Board Number of THE JOURNAL. The report for 1950 constitutes the forty-ninth annual presentation. Data are included pertaining to a) medical examining and licensing boards of the United States, the District of Columbia and the territories and outlying possessions of the United States, b) the boards of examiners in the basic sciences and c) the National Board of Medical Examiners.

The computations presented are based on official records received throughout the year from the medical examining and licensing agencies of all states, Alaska, Hawaii, Puerto Rico, Guam and the Virgin Islands, the twenty boards of examiners in the basic sciences and the National Board of Medical Examiners. This presentation is made possible because of the whole-hearted cooperation of these agencies. The Council and THE JOURNAL gratefully acknowledge their appreciation to those who have supplied these data as well as other records furnished throughout the year.

The tables referring to medical licensing boards present figures pertaining to the number of candidates examined, the numbers licensed and the number who represent additions to the physician population. There are also included other pertinent data pertaining to the regulations for medical licensure. The state boards are discussed first, followed by the basic science boards and the National Board of Medical Examiners.

STATE BOARDS OF MEDICAL EXAMINERS

Licenses Issued

In 1950, 12,209 licenses to practice medicine were issued by the medical examining boards of the forty-eight states, the District of Columbia, Alaska, Guam, Hawaii, Puerto Rico and the Virgin Islands. The number licensed in each state by examination or by the endorsement of credentials is shown in table 1. Of the 12,209 licenses issued, 5,454 were granted after examination and 6,755 by reciprocity and endorsement of state licenses or the certificate of the National Board of Medical Examiners.

Physicians certified in a given year after written examination in all instances were not tested in that year. The licensing boards of 24 states, the District of Columbia, Alaska, Guam, Hawaii, Puerto Rico and the Virgin Islands require a year of internship for licensure. The candidate for medical licensure in some of these states is per-

TABLE 1.—*Licenses Issued, 1950*

	Examination	On the Basis of Reciprocity and Endorsement	Total
Alabama	36	92	128
Arizona	8	50	58
Arkansas	74	42	116
	519	837	1,356
	76	79	155
	24	216	240
	23	7	30
	24	154	178
Florida	332	0	332
Georgia	147	78	225
Idaho	2	54	56
Illinois	394	251	645
Indiana	112	134	246
Iowa	61	124	185
Kansas	96	63	159
Kentucky	89	75	164
Louisiana	189	84	273
Maine	19	55	74
	190	133	323
	40	265	305
	156	264	420
	201	147	348
	63	69	132
Missouri	202	148	350
	5	35	40
	96	33	129
	0	19	19
	6	47	53
	41	232	273
	2	70	72
	290	871	1,161
	97	133	230
	35	9	44
Ohio	314	297	611
Oklahoma	58	63	121
Oregon	38	57	95
	325	262	587
	12	19	31
	59	45	104
	20	25	45
	175	81	256
Texas	331	421	752
Utah	30	48	78
Vermont	13	30	43
Virginia	138	128	266
	60	125	185
	42	67	109
	130	132	262
	2	27	29
	58	58	116
Totals	5,454	6,755	12,209

TABLE 2.—CANDIDATES EXAMINED

Marginal Number	SCHOOL	1 Alabama		2 Arizona		3 Arkansas		4 California		5 Colorado		6 Connecticut		7 Delaware		8 Dist. of Columbia		9 Florida		10 Georgia		11 Idaho		12 Illinois		13 Indiana		14 Iowa		15 Kansas		16 Kentucky		17 Louisiana		18 Maine		19 Maryland		20 Massachusetts		21 Michigan	
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F
	ALABAMA																																										
1	Medical College of Alabama, Birmingham	30	0															1	0	5	0																						
	ARKANSAS																																										
2	University of Arkansas School of Medicine, Little Rock					70	0	2	0							1	0																										
	CALIFORNIA																																										
3	University of California School of Medicine, San Francisco							72	1			1	0																											2	0		
4	Coll. of Medical Evangelists, Loma Linda-Los Angeles			1	1			51	3									4	0					1	0			1	0									2	0			[illegible]	
5	Univ. of So. California School of Med., Los Angeles			1	0			67	0			1	0																														
6	Stanford University School of Medicine, Stanford University-San Francisco			1	0	1	0	77	2	1	0	1	0																	1	0												
	COLORADO																																										
7	University of Colorado School of Medicine, Denver							4	0	56	0							1	0	1	0																			1	[illegible]		
	CONNECTICUT																																										
8	Yale University School of Medicine, New Haven									1	0	0	1	1	0			1	0																	1	0						
	DISTRICT OF COLUMBIA																																										
9	Georgetown University School of Med., Washington							2	0			1	0			3	0	6	0																								
10	George Washington Univ. School of Med., Washington							3	0							1	0	4	2																	1	0	1	0			1	[illegible]
11	Howard University College of Medicine, Washington							1	1			1	1			7	1	3	0	1	0			3	0									2	0			6	0				
	GEORGIA																																										
12	Medical College of Georgia, Augusta													1	0			14	0	80	0																						
13	Emory University School of Med., Emory University																	31	1	51	0																						
	ILLINOIS																																										
14	Chicago Medical							1	0			1	0					1	0					15	0							1	0	1	0								
15	Northwestern Un							14	0	1	0							7	1					66	0	1	0					3	0	4	0							3	0
16	Stritch School of							5	0									4	1					29	1	1	0					1	0									3	[illegible]
17	University of Chicago, The School of Medicine							7	0									2	0					20	0	2	0	1	0					1	0			1	0			[illegible]	
18	University of Illinois College of Medicine, Chicago							16	0	3	0					1	0	11	1					100	1	3	0	3	0					1	0					1	0	5	[illegible]
	INDIANA																																										
19	*Indiana University School of Medicine, Bloomington-Indianapolis*							5	0									7	0					4	0	93	1																
	IOWA																																										
20	State University of Iowa College of Med., Iowa City							5	0									2	0					2	0			63	1														
	KANSAS																																										
21	Univ. of Kansas School of Med., Lawrence-Kansas City							1	0															1	0	1	0			82	0											[illegible]	
	KENTUCKY																																										
22	University of Louisville School of Medicine			1	0			2	1					1	0			5	2					1	0							76	0									[illegible]	
	LOUISIANA																																										
23	Louisiana State Univ. School of Med., New Orleans							3	0									3	1					1	0									61	0			1	0				
24	Tulane University of Louisiana School of Medicine, New Orleans	2	0					3	0									15	1					3	0									97	1							1	[illegible]
	MARYLAND																																										
25	John Hopkins University School of Med., Baltimore							2	0			1	0	1	0			2	0					5	0			1	0					1	0			60	0			[illegible]	
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	1	0					2	0					2	0			6	1					3	0													68	1				
	MASSACHUSETTS																																										
27	Boston University School of Medicine							1	0									3	0					2	0																	1	[illegible]
28	Harvard Medical School, Boston	1	0					4	0					1	0			8	0	1	0			1	0	1	0					1	0	3	0			1	0	3	0	1	[illegible]
29	Tufts College Medical School, Boston													1	0			2	1											1	0					2	0			1	0	1	[illegible]
	MICHIGAN																																										
30	University of Michigan Medical School, Ann Arbor							3	0					1	0			4	2					1	0															[illegible]		[illegible]	
31	Wayne University College of Medicine, Detroit							3	0									2	0																					[illegible]		[illegible]	
	MINNESOTA																																										
32	University of Minnesota Medical School, Minneapolis							5	0									1	0					10	1					1	0												
	MISSOURI																																										
33	St. Louis University School of Medicine							7	1									5	2					5	0					1	0												
34	Washington University School of Medicine, St. Louis							3	0	1	0	1	0											8	0									1	0								
	NEBRASKA																																										
35	Creighton University School of Medicine, Omaha							3	2			1	2					1	0					3	0	1	0	10	0	4	0											1	
36	University of Nebraska College of Medicine, Omaha							1	0									1	0					2	0	1	0			1	0			1	0								
	NEW YORK																																										
37	Albany Medical College,							1	0									1	0															1	0								
38	State University of New Center at New York Ci													1	0			6	0															1	0			2	0				
39	University of Buffalo Scl																	2	0											1	0												
40	Columbia University Col geons, New							3	0									5	1									1	0	1	0					2	0						
41	Cornell Univer							6	0									2	1					1	0									1	0	2	0	1	0				
42	New York Mec Hospitals, New Y																	4	0																							1	
43	New York Universit	1	0															7	3					1	0					1	0			1	0								
44	University of Roche tistry							3	0																			1	0					1	0								
45	State U Syracu					1	0	1	0									2	0																			1	0				

23 Mississippi		24 Missouri		25 Montana		26 Nebraska		27 Nevada		28 New Hampshire		29 New Jersey		30 New Mexico		31 New York		32 North Carolina		33 North Dakota		34 Ohio		35 Oklahoma		36 Oregon		37 Pennsylvania		38 Rhode Island		39 South Carolina		40 South Dakota		41 Tennessee		42 Texas		43 Utah		44 Vermont		45 Virginia		46 Washington		47 West Virginia		48 Wisconsin		49 Wyoming		50 Alaska, Hawaii, Puerto Rico and Virgin Islands		Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F						
	0																																																							37	37	0	0.0	4	1
																1	0																					1	0																	77	77	0	0.0	6	2
																																						1	0							1	0							1	0	79	78	1	1.3	6	3
1	0																							1	0													1	0											2	0					1	0	74	70	4	5.4	13	4
																																																								70	70	0	0.0	4	5
																1	0																													2	0	1	0							88	86	2	2.3	9	6
1	0																			1	0	1	0	1	0																															67	67	0	0.0	9	7
				1	0											1	0																					1	0																	9	8	1	11.1	9	8
																2	1																													2	0	1	0							20	19	1	5.0	8	9
																						1	0					1	0																	1	0							1	0	17	15	2	11.8	10	10
		6	0									2	0			2	6	10	0									4	0			2	0															1	0					2	0	62	53	9	14.5	16	11
																																						1	0									1	0							97	97	0	0.0	5	12
																																																								83	82	1	1.2	2	13
		1	0													5	1																																							27	26	1	3.7	8	14
	0	1	0	2	0											0	1			1	0	3	0			1	0	1	0					5	0			3	0							12	0			4	0			1	0	154	152	2	1.3	22	15
																1	1					3	0					1	0	1	0															2	0			5	0			1	0	61	58	3	4.9	14	16
												2	0	1	0	2	0			2	0	1	0	1	0	2	0	1	0			1	0					1	0							3	0			2	0			1	0	57	57	0	0.0	22	17
	0	2	0							1	0					4	2			4	0					2	0	1	0					1	0			1	0	1	0					1	0			2	0					177	173	4	2.3	23	18
	0																																																	1	0					116	115	1	0.9	7	19
																																						1	0											4	0					78	77	1	1.3	6	20
																										2	0			1	0															4	0							1	0	95	95	0	0.0	9	21
																1	0	3	0	1	0							3	0											1	0							2	0	3	0			2	0	106	103	3	2.8	15	22
	0																											1	0																							1	0	1	0	80	79	1	1.2	9	23
	0																					1	0															3	0											1	0			3	0	140	138	2	1.4	11	24
	0																					1	0					1	0									1	0																	81	81	0	0.0	13	25
																		2	0			1	0					2	0																									1	0	90	88	2	2.2	10	26
																														1	0																			2	0					10	10	0	0.0	6	27
3	0																	9	0			1	0							1	0													1	0					1	0			1	0	43	43	0	0.0	19	28
														1	0			1	0					1	0					0	1																			1	0			1	0	15	13	2	13.3	12	29
												1	0																									2	0											4	0			1	0	114	112	2	1.8	11	30
																												1	0									1	0											1	0			1	0	71	71	0	0.0	9	31
																1	1			3	0																	0	1							1	0			2	0			1	0	132	129	3	2.3	11	32
		98	0							1	0					2	1			1	0							1	0																					3	0			1	0	133	129	4	3.0	12	33
2	0	78	0																	1	0													1	0													1	0					1	0	99	99	0	0.0	12	34
						22	0									1	0									2	1	1	0																	3	0	1	0	1	0			1	0	63	58	5	7.9	17	35
						70	1																			1	0									1	0																			80	79	1	1.2	9	36
		1	0													1	0																																	1	0					6	6	0	0.0	6	37
																5	2											1	0																	1	0	1	0					1	0	21	19	2	9.5	9	38
																																																		1	0					4	4	0	0.0	3	39
																4	1			1	0							2	0																	1	0			1	0					23	21	2	8.7	10	40
												3	0			7	3					1	0					3	0							1	0	2	0																	35	31	4	11.4	13	41
												1	0			3	3											1	0							1	0	1	0																	16	13	3	18.7	7	42
												1	0			13	11																													1	0	1	0	1	0			1	0	44	30	14	29.5	12	43
																4	0	1	0	1	0	2	0			1	0	1	0	1	0															3	0									20	20	0	0.0	12	44
																5	2																																					0	1	13	10	3	23.1	6	45
23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50							

TABLE 2.—CANDIDATES EXAMINE

Marginal Number	SCHOOL	1 Alabama		2 Arizona		3 Arkansas		4 California		5 Colorado		6 Connecticut		7 Delaware		8 Dist. of Columbia		9 Florida		10 Georgia		11 Idaho		12 Illinois		13 Indiana		14 Iowa		15 Kansas		16 Kentucky		17 Louisiana		18 Maine		19 Maryland		20 Massachusetts	
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F
	NORTH CAROLINA																																								
46	Duke University School of Medicine, Durham																	11	0																						
47	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem																	2	0					1	0			1	0												
	OHIO																																								
48	University of Cincinnati College of Medicine			1	0			2	0									4	0					3	0									1	0						
49	Western Reserve University School of Med., Cleveland							2	0			1	0					2	0					2	0																
50	Ohio State University College of Medicine, Columbus							1	0									9	1					2	0													1	0		
	OKLAHOMA																																								
51	Univ. of Oklahoma School of Med., Oklahoma City							1	0									2	1					4	0					1	0										
	OREGON																																								
52	University of Oregon Medical School, Portland							11	0	1	0													1	0			2	0												
	PENNSYLVANIA																																								
53	Hahnemann Med. Coll. and Hospital of Philadelphia							6	0					3	0			2	0					1	0													6	0	1	1
54	Jefferson Medical College of Philadelphia	1	0	1	0			8	2	1	0			2	0	3	0	6	1					3	0											2	0	2	0	2	0
55	Temple University School of Medicine, Philadelphia							6	0					2	0			12	1					2	0							1	0	1	0			1	0	1	0
56	Univ. of Pennsylvania School of Med., Philadelphia	1	0					2	0			2	0	2	0			7	0					1	0									2	0			2	0		
57	Woman's Med. College of Pennsylvania, Philadelphia							1	0			1	0	1	0			1	0																			0	1		
58	University of Pittsburgh School of Medicine							4	0			1	0					6	0					1	0																
	SOUTH CAROLINA																																								
59	Medical Coll. of the State of So. Carolina, Charleston																	10	0	2	0			2	0			1	0												
	TENNESSEE																																								
60	University of Tennessee College of Medicine, Memphis							2	0			0	1					2	2					7	1							2	0	1	0						
61	Meharry Medical College, Nashville							1	0									7	1	2	1			3	1							2	0					1	0		
62	Vanderbilt University School of Medicine, Nashville																	8	0					1	0							1	0	1	0						
	TEXAS																																								
63	Southwestern Medical School of the University of Texas, Dallas			1	0			3	0			1	0																												
64	University of Texas School of Medicine, Galveston							5	0									1	0															1	0						
65	*Baylor University College of Medicine, Houston*							3	1									1	0																						
	UTAH																																								
	University of Utah School of Med., Salt Lake City							16	0	2	0													1	0	1	0											1	0		
	VERMONT																																								
67	University of Vermont College of Med., Burlington							2	0																											1	0			0	1
	VIRGINIA																																								
68	University of Virginia Dept. of Med., Charlottesville																	8	0					4	0																
69	Medical College of Virginia, Richmond																	2	1	1	0			1	0																
	WASHINGTON																																								
70	University of Washington School of Medicine, Seattle																																								
	WISCONSIN																																								
71	University of Wisconsin Medical School, Madison			1	0			2	0															7	0									2	0						
72	Marquette University School of Medicine, Milwaukee							9	0	1	0	1	0	1	0			3	0					3	0	1	0									1	0			2	0
	CANADA																																								
73	University of Alberta Faculty of Medicine, Edmonton							2	0															1	0																
74	University of Manitoba Faculty of Med., Winnipeg							6	1					1	0																			1	0						
75	Dalhousie University Faculty of Medicine, Halifax																																								
76	Queen's University Faculty of Medicine, Kingston							1	0															0	1	1	0													0	1
77	University of Western Ontario Faculty of Medicine, London							1	0									1	0					2	0																
78	University of Toronto Faculty of Medicine, Toronto							4	0									1	1					3	0	1	0											3	0		
79	*McGill University Faculty of Medicine, Montreal*	1	0					4	0					1	0			1	1			1	0	3	0									1	0	2	0	3	0	3	0
80	University of Montreal Faculty of Med., Montreal																																	1	0			1	0		
81	Laval University Faculty of Medicine, Quebec																																			5	0			0	1
	OTHERS																																								
82	Foreign Medical Faculties	1	0			1	0	47	22			9	11			6	2	9	2	2	0			46	54	1	0	1	0	1	1					0	1	17	8	2	16
83	Extinct Medical Schools															1	0	5	1					1	0													1	0		
84	Unapproved Medical Schools					1	0	2	0									16	12	1	0			5	0															[illegible]	[illegible]
85	Schools of Osteopathy									8	0	4	3			1	0									3	2													[illegible]	[illegible]
86	TOTALS	39		9		74		580		76		48		23		27		371		148		1		459		115		87		97		88		191		20		193		97	
87	Totals—Examined—Passed	39		8		74		543		76		29		23		24		325		147		1		399		112		86		96		88		190		19		183		26	
88	Totals—Examined—Failed	0		1		0		37		0		19		0		3		46		1		0		60		3		1		1		0		1		1		10		71	
89	Percentage Failed	0.0		11.1		0.0		6.3		0.0		39.6		0.0		11.1		12.1		0.7		0.0		13.0		2.6		1.1		1.0		0.0		0.5		5.0		5.2		73.2	
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20	

P—Passed; F—Failed.

mitted to write the examination before or while serving an internship and, if successful, the license is issued on completion of the internship. Licenses are withheld in some states for other technicalities. In general, also, the licenses of physicians examined in December are dated and issued early in the following year. Table 1, therefore, includes some who were examined in 1949 and a few in previous years. The figures presented in this table will not correspond with succeeding tables which deal entirely with physicians examined for licensure within the year 1950.

Neither does this table, particularly the endorsement group, represent entirely individuals but includes persons who may have been licensed in more than one state in a given year; nor does the total represent additions to the medical profession, since a physician may have been

23 Mississippi		24 Missouri		25 Montana		26 Nebraska		27 Nevada		28 New Hampshire		29 New Jersey		30 New Mexico		31 New York		32 North Carolina		33 North Dakota		34 Ohio		35 Oklahoma		36 Oregon		37 Pennsylvania		38 Rhode Island		39 South Carolina		40 South Dakota		41 Tennessee		42 Texas		43 Utah		44 Vermont		45 Virginia		46 Washington		47 West Virginia		48 Wisconsin		49 Wyoming		50 Alaska, Hawaii, Puerto Rico and Virgin Islands		Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F						
																		1	0																																					15	15	0	0.0	3	46
1	0															1	1	26	0	1	0	1	0					1	0									1	0									1	0					0	1	40	38	2	5.0	13	47
																0	1			1	0	76	2					1	0	1	0													2	0			2	0					1	0	98	95	3	3.1	13	48
1	0															1	3					89	0					1	0																			2	0	1	0					105	102	3	2.9	10	49
																1	1					69	1					2	0	1	1															1	0	1	0							93	89	4	4.3	11	50
																								76	0																															85	84	1	1.2	5	51
		1	0			1	0													1	0					24	1	1	0					1	0			1	0	1	0					6	0									56	55	1	1.8	15	52
												5	1			3	3					1	0					39	0											1	0	1	0					2	0					5	1	83	77	6	7.2	15	53
2	0	1	0			1	0					7	0			3	4	6	0			2	0					76	0									1	0									2	0	2	0			2	0	147	140	7	4.8	25	54
1	0			1	0							3	1			4	1	1	0	2	0	2	0			1	0	42	0			1	0	1	0	1	0											1	0	2	0					97	94	3	3.1	24	55
1	0									1	0	2	0			2	1	13	0									55	0	2	0							1	0	1	0	1	0													102	101	1	1.0	20	56
												1	0			1	0					1	0					12	0																					1	0					22	21	1	4.5	11	57
												1	0									3	0					44	0																									1	0	64	64	0	0.0	10	58
																												1	0			54	0															1	0							71	71	0	0.0	7	59
10	0															2	1					2	0					4	0					2	0	70	0											2	0					1	0	113	108	5	4.4	15	60
2	0	9	0									1	0			1	4	7	0			1	0					2	0							31	0											2	0							80	73	7	8.7	16	61
2	0																	2	0																	35	0											1	0							52	52	0	0.0	9	62
4	0					1	0																					1	0					1	0			46	2																	60	58	2	3.3	8	63
																												1	0									94	1																	104	103	1	1.0	6	64
2	0																											1	0									74	4															1	1	88	82	6	6.8	6	65
																1	0									1	0													23	0											1	0			49	49	0	0.0	11	66
												1	0																													13	0							1	0					19	18	1	5.3	6	67
3	0															1	1	2	0																	1	0							51	0			1	0	1	0			2	0	75	74	1	1.3	10	68
																		2	0									4	0															77	0			11	0					1	0	100	99	1	1.0	8	69
																																																								0	0	0	0.0	0	70
		1	0	1	0	1	0									1	0					2	0			1	0							1	0											4	0			41	0			2	0	70	70	0	0.0	16	71
												1	0			5	5					2	0					1	0															2	0					32	0			4	0	83	78	5	6.0	18	72
		1	0							1	0																																			1	0									8	8	0	0.0	6	73
																				3	0																			1	0			1	0	1	0			1	0					18	17	1	5.6	10	74
1	0																							1	0																															4	4	0	0.0	3	75
																2	0			2	0							1	0																	1	0									11	9	2	18.2	9	76
																1	0			0	1							1	0																					1	0					10	9	1	10.0	8	77
		1	0													7	2			1	0	4	0					2	0	1	0													0	1	2	0			1	0					35	31	4	11.4	14	78
										2	0					5	1	3	0	2	0	1	0					3	0	1	0													1	0	2	0			1	0					44	42	2	4.5	21	79
																																														1	0									3	3	0	6.0	3	80
																1	0																									0	1													8	6	2	25.0	4	81
		2	0							0	1	2	6			140	293	5	1	4	2	25	13	1	0			2	2	1	1	1	0	5	0			4	3					2	0	3	0							9	1	799	359	440	55.0	32	82
																				2	0													1	0													1	0							15	14	1	6.7	8	83
1	1															7	13	3	0			1	0					1	0																									2	1	118	45	73	62.2	12	84
						0	2					7	3			34	26					28	3											1	0			35	5					1	0					4	0					175	126	49	28.0	13	85
65		206		5		99		0		7		52		2		687		98		38		345		82		40		328		15		59		20		142		293		29		16		139		60		42		130		2		63		6,203					86
64		206		5		96		0		6		41		2		290		97		35		326		82		38		326		12		59		20		142		277		29		15		138		60		42		130		2		57			5,481				87
1		0		0		3		0		1		11		0		397		1		3		19		0		2		2		3		0		0		0		16		0		1		1		0		0		0		0		6				722			88
1.5		0.0		0.0		3.0		0.0		14.3		21.2		0.0		57.8		1.0		7.9		5.5		0.0		5.0		0.6		20.0		0.0		0.0		0.0		5.4		0.0		6.3		0.7		0.0		0.0		0.0		0.0		9.5					11.6		89
23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50							

licensed in more than one state during the year 1950. In tables 12, 13 and 14 (pages 356 and 357) can be noted the number who secured licenses for the first time and represent additions to the medical profession in the United States and its territories and outlying possessions.

Of the 12,209 licenses to practice medicine and surgery issued in 1950, the greatest number (1,356) were issued in California. New York licensed the next largest number 1,161. More than 500 physicians were registered in Illinois, Ohio, Pennsylvania and Texas. The fewest, 19, were licensed in Nevada.

A recapitulation of totals pertaining to licenses issued for fifteen previous years and for 1950 by both examination and reciprocity or endorsement of credentials is included in table 3. The variations shown for the years from 1936 to 1941, inclusive, were the result of the noticeable increase in the licensure of graduates of foreign medical faculties. In 1946 the number licensed almost doubled the 1945 figure. The increase in 1946 and the succeeding years resulted from the increase in the production of physicians under the accelerated program in medical schools. The number of licenses issued annually continues to exceed the prewar years although the numbers are decreasing each year. In 1950 there was a slight increase of 28 over the previous year.

TABLE 3.—*Licenses Issued, 1935-1950*

	Examination	Reciprocity and Endorsement	Total
1935	5,725	2,194	7,919
1936	6,276	2,773	9,049
1937	6,629	3,205	9,834
1938	6,557	2,956	9,513
1939	6,400	2,872	9,272
1940	6,289	2,866	9,155
1941	6,057	2,762	8,819
1942	6,152	2,469	8,621
1943	6,062	2,340	8,402
1944	7,080	2,596	9,676
1945	5,580	3,622	9,202
1946	6,567	9,669	16,236
1947	6,763	7,701	14,464
1948	5,997	7,595	13,592
1949	5,252	6,929	12,181
1950	5,454	6,755	12,209
Totals	98,840	69,304	168,144

In the sixteen year period 1935 to 1950, 168,144 medical licenses have been issued, 98,840 after written examination and 69,304 by endorsement of credentials.

Candidates Examined by Medical Examining Boards

In table 2 are recorded data referring to those examined for medical licensure in 1950 by individual states, the District of Columbia, Alaska, Hawaii, Puerto Rico and the Virgin Islands. For each there are given the numbers who passed and failed, the medical school of graduation, the percentage of failures for each school as well as each licensing board and the number of states in which graduates of a given school were examined. Medical schools in the United States which are no longer in existence, foreign faculties of medicine, unapproved medical schools and schools of osteopathy are not listed by name, but the numbers examined in these three categories are included following those for existing medical schools in the United States and Canada.

TABLE 4.—*Graduates of Medical Schools in Canada Examined for Licensure in the United States, 1950*

	Examined	Passed	Failed
Alabama	1	1	0
California	19	18	1
Delaware	2	2	0
Florida	5	3	2
Idaho	1	1	0
Illinois	10	9	1
Indiana	2	2	0
Louisiana	3	3	0
Maine	7	7	0
Maryland	7	7	0
Massachusetts	5	3	2
Michigan	1	1	0
Minnesota	9	9	0
Mississippi	1	1	0
Missouri	2	2	0
New Hampshire	3	3	0
New York	19	16	3
North Carolina	3	3	0
North Dakota	9	8	1
Ohio	5	5	0
Oklahoma	1	1	0
Pennsylvania	7	7	0
Rhode Island	2	2	0
Utah	1	1	0
Vermont	1	0	1
Virginia	3	2	1
Washington	8	8	0
Wisconsin	4	4	0
Totals	141	129	12

Throughout the last calendar year 6,203 were examined, of whom 5,481 passed and 722 failed. The candidates represented graduates of seventy-one of the seventy-two approved medical schools of the United States, nine approved medical schools of Canada, five medical schools in the United States no longer in operation, 139 faculties of medicine and five licensing corporations of other countries, five unapproved medical schools in the United States and seven schools of osteopathy. Osteopaths who were granted the legal right to practice medicine, surgery, or both, by the medical examining boards are included in these statistics. Osteopaths in other states who were granted the privilege of special practice by other than medical examining boards are excluded from these compilations.

Examination and reciprocity meetings have been scheduled at frequent intervals in recent years to facilitate licensure and to enable physicians to commence practice without undue delay. Later in this study there is included a tabulation giving the schedules for all states.

Represented among the 6,203 examinees were 4,955 graduates of approved medical schools in the United States, of whom 2.9 per cent failed; 141 graduates of approved schools in Canada with 8.5 per cent failures; 15 who were graduated from medical schools no longer operating with 6.7 per cent failures; 799 graduates of faculties of medicine located in countries other than the United States and Canada, 55 per cent of whom failed; 118 graduates of unapproved medical schools in the United States, none of which are in existence, with 62.2 per cent failures and 175 graduates of schools of osteopathy with 28 per cent failures.

TABLE 5.—*Source of Candidates Examined for Licensure in the United States, 1950*

Medical Schools	Number of Schools	Number Examined	Number Passed	Number Failed	Percentage Failed
Approved in United States	72	4,955	4,808	147	2.9
Approved in Canada	9	141	129	12	8.5
Extinct	5	15	14	1	6.7
Foreign	144	799	359	440	55.0
Unapproved Schools	5	118	45	73	62.2
Schools of Osteopathy	7	175	126	49	28.0
Totals	242	6,203	5,481	722	11.6

As in table 1, the 6,203 examinees do not represent an equal number of individuals, since a candidate tested in more than one state in a calendar year is counted in each state. However, if a candidate failed more than once in a given state within the year, he is counted in that state as a single failure. Figures which show the number of individual licentiates added to the medical profession in 1950 are given in tables 12, 13 and 14.

The greatest number of graduates of any one school examined was 177, representing the University of Illinois College of Medicine, 101 of whom were tested in Illinois and 76 in twenty-two other states. The greatest number examined from private schools was 154 representing Northwestern University Medical School who were tested in twenty-two states, sixty-six of whom were examined in Illinois where the school is located. More than 125 graduates of four other schools applied for licensure by the written examination method in the last calendar year; namely, Tulane University (140) in eleven states; University of Minnesota (132) in eleven states; St. Louis University (133) in twelve states and Jefferson Medical College (147) in twenty-five states. Yale University with nine examinees, Albany Medical College with nine examinees and the University of Buffalo with four represented schools with the fewest number of applicants for medical licensure by written examination before state boards. The majority of graduates of these three schools are licensed by endorsement of the certificate of the National Board of Medical Examiners. The University of Washington School of Medicine graduated its first class in 1950 but none appeared for licensure in 1950 before any state board.

Twenty-one approved schools in the United States had no failures before medical licensing boards, thirty-one less than 5 per cent and eleven between 5 and 10 per cent. There were eight schools with 10 per cent or more of failures in state examinations. The over-all figures and percentages for failures are modified by data on those who were examined by the National Board of Medical Examiners in its final examination as well as those passing state tests. (See table 6.)

Graduates of Jefferson Medical College were examined in the greatest number of states, twenty-five, Temple University alumni were tested in twenty-four states and the University of Illinois by twenty-three state boards. Three schools had graduates examined in fewer than four states.

A total of 141 graduates of nine approved medical schools in Canada appeared for licensure in the United States in 1950 in twenty-eight states. The figures are given for each licensing board by school in table 1 and by totals in table 4. Of the 141 candidates, 129 passed and 12, 8.5 per cent, failed. California and New York examined 19, Illinois 10 and all other states fewer than 10. Two Canadian medical schools had no failures before United States licensing boards. The lowest failing percentage was 4.5.

Graduates of five unapproved medical schools were examined in eleven states and Hawaii and graduates of seven schools of osteopathy were tested in ten states and the District of Columbia. Represented were 118 graduates of unapproved schools of whom 45 passed and 73, 62.2 per cent, failed and 175 osteopathic graduates, of whom 126 passed and 49, 28.0 per cent failed.

Graduates of foreign faculties of medicine were examined in thirty states, the District of Columbia, Hawaii, Puerto Rico and the Virgin Islands. There were 799 such graduates with 440, or 55 per cent, failures.

Fifteen graduates of five approved medical schools no longer in operation were tested in eight states, of whom 14 passed and one failed (6.7 per cent).

In all six categories mentioned, 6,203 candidates appeared before medical examining boards in 1950, of whom 5,481 passed and 722, or 11.6 per cent failed.

Totals for the six categories are given in table 5. It will be noted that from the existing approved medical schools in the United States there were 2.9 per cent who failed, 8.5 per cent of the graduates of Canadian schools and 6.7 of the graduates of extinct medical schools. The greatest percentage of failures represented three groups, foreign faculties of medicine, unapproved medical schools

TABLE 6.—*Consolidated Examinations, State Medical Examining Boards and the National Board of Medical Examiners, 1950*

School	Results by Medical Examining Board Tests P	F	Part III Examination of National Board of Medical Examiners P	F	Total Examined	Totals P	F	Percentage Failed
Medical College of Alabama..	37	0	1	0	38	38	0	0.0
University of Arkansas.......	77	0	1	0	78	78	0	0.0
University of California......	78	1	3	0	82	81	1	1.2
Coll. of Med. Evan..........	70	4	29	1	104	99	5	4.8
Univ. of Southern California	70	0	10	0	80	80	0	0.0
Stanford University..........	86	2	4	0	92	90	2	2.2
University of Colorado.......	67	0	6	0	73	73	0	0.0
Yale University................	8	1	52	0	61	60	1	1.6
[illegible]	19	1	77	1	98	96	2	2.0
	15	2	69	0	86	84	2	2.3
	53	9	12	1	75	65	10	13.3
	97	0	1	0	98	98	0	0.0
	82	1	5	0	88	87	1	1.1
	26	1	6	0	33	32	1	3.0
	152	2	33	0	137	185	2	1.1
	58	3	9	0	70	67	3	4.3
	57	0	8	0	65	65	0	0.0
	173	4	23	0	200	196	4	2.0
Indiana University............	115	1	1	0	117	116	1	0.9
[illegible]	77	1	24	0	102	101	1	1.0
	95	0	1	0	96	96	0	0.0
	103	3	9	0	115	112	3	2.6
Louisiana State University...	79	1	0	0	80	79	1	1.2
Tulane Univ. of Louisiana....	138	2	17	0	157	155	2	1.3
Johns Hopkins University....	81	0	12	0	93	93	0	0.0
University of Maryland.......	88	2	14	0	104	102	2	1.9
Boston University............	10	0	51	0	61	61	0	0.0
Harvard Medical School......	43	0	122	0	165	165	0	0.0
Tufts College Medical School.	13	2	84	1	100	97	3	3.0
University of Michigan........	112	2	26	0	140	138	2	1.4
Wayne University.............	71	0	2	0	73	73	0	0.0
University of Minnesota......	129	3	12	0	144	141	3	2.1
St. Louis University..........	129	4	9	0	142	138	4	2.8
Washington University........	99	0	11	0	110	110	0	0.0
Creighton University..........	58	5	15	0	78	73	5	6.4
University of Nebraska........	79	1	10	0	90	89	1	1.1
Albany Medical College.......	6	0	37	1	44	43	1	2.3
State Univ. (Brooklyn).......	19	2	87	1	109	106	3	2.8
University of Buffalo.........	4	0	52	0	56	56	0	0.0
Columbia University..........	21	2	115	0	138	136	2	1.4
Cornell University............	31	4	48	0	83	79	4	4.8
New York Medical College....	13	3	86	4	106	99	7	6.6
New York University..........	30	14	102	1	147	132	15	10.2
University of Rochester.......	20	0	43	0	63	63	0	0.0
State University (Syracuse)...	10	3	41	0	54	51	3	5.6
Duke University...............	15	0	52	0	67	67	0	0.0
Bowman-Gray School of Med.	38	2	1	0	41	39	2	4.9
University of Cincinnati......	95	3	2	1	101	97	4	4.0
Western Reserve University...	102	3	8	0	113	110	3	2.7
Ohio State University.........	89	4	4	0	97	93	4	4.1
University of Oklahoma......	84	1	2	0	87	86	1	1.1
University of Oregon..........	55	1	4	0	60	59	1	1.7
Hahnemann Medical College..	77	6	31	1	115	108	7	6.1
Jefferson Medical College.....	140	7	22	0	169	162	7	4.1
Temple University.............	94	3	29	0	126	123	3	2.4
University of Pennsylvania...	101	1	35	0	137	136	1	0.7
Woman's Medical College.....	21	1	15	0	37	36	1	2.7
University of Pittsburgh......	64	0	7	0	71	71	0	0.0
Med. Coll. of South Carolina.	71	0	2	0	73	73	0	0.0
University of Tennessee.......	108	5	2	0	115	110	5	4.3
Meharry Medical College......	73	7	7	0	87	80	7	8.0
Vanderbilt University.........	52	0	9	0	61	61	0	0.0
Southwestern Medical School.	58	2	2	0	62	60	2	3.2
University of Texas...........	103	1	5	0	109	108	1	0.9
Baylor University..............	82	6	1	0	89	83	6	6.7
University of Utah............	49	0	4	0	53	53	0	0.0
University of Vermont........	18	1	32	0	51	50	1	2.0
University of Virginia........	74	1	1	0	76	75	1	1.3
Medical College of Virginia...	99	1	9	0	109	108	1	0.9
University of Washington....	0	0	0	0	0	0	0	0.0
University of Wisconsin......	70	0	2	0	72	72	0	0.0
Marquette University..........	78	5	18	1	102	96	6	5.9
Subtotals: U. S. Schools...	4,808	147	1,686	14	6,655	6,494	161	2.4
University of Alberta.........	8	0	0	0	8	8	0	0.0
University of Manitoba.......	17	1	1	0	19	18	1	5.3
Dalhousie University..........	4	0	0	0	4	4	0	0.0
Queen's University............	9	2	2	1	14	11	3	21.4
Univ. of Western Ontario....	9	1	2	0	12	11	1	8.3
University of Toronto........	31	4	12	0	47	43	4	8.5
[illegible]	42	2	17	1	62	59	3	4.8
	3	0	0	0	3	3	0	0.0
	6	2	0	0	8	6	2	25.0
Subtotals: Canadian Schools	129	12	34	2	177	163	14	7.9
Foreign Medical Faculties....	359	440	15	0	814	374	440	54.0
Extinct Medical Schools......	14	1	1	0	16	15	1	6.7
Unapproved Schools...........	45	73	0	0	118	45	73	62.2
Schools of Osteopathy.......	126	49	0	0	175	126	49	28.0
Totals	5,481	722*	1,736	16*	7,935	7,217	738	9.2

* Represents individuals failed.

and schools of osteopathy. In these groups, 55, 62.2 and 28 per cent, respectively, failed. Those registered in these three groups are separately discussed later in an analysis of these statistics.

Elsewhere (see tables 12, 13 and 14, pages 356 and 357) are given figures referring to actual licentiates and additions to the medical profession.

TABLE 7.—*Licensure Failures by Graduates of Existing Approved Schools in the United States Located in the State Where Examined and Elsewhere, 1950*

States with Four Year Medical Schools	Total No. Examined	No. Failures of Schools in State	No. Schools in State Represented at Examinations	Per Cent Failed	No. Failures of Schools Out of State	No. Schools Out of State Represented at Examinations	Per Cent Failed	Per Cent Failed in All U. S. Schools
Alabama.........	39	0	1	0.0	0	6	0.0	0.0
Arkansas........	74	0	1	0.0	0	3	0.0	0.0
California.......	580	6	4	1.0	8	52	1.3	2.4
Colorado........	76	0	1	0.0	0	9	0.0	0.0
Connecticut......	48	1	1	2.1	4	16	8.3	10.4
Dist. of Columbia	27	1	3	3.7	0	3	0.0	3.7
Georgia..........	148	0	2	0.0	1	7	4.7	4.7
Illinois...........	459	2	5	0.4	3	40	0.6	1.0
Indiana..........	115	1	1	0.9	0	10	0.0	0.9
Iowa............	87	1	1	1.1	0	10	0.0	1.1
Kansas...........	97	0	1	0.0	0	10	0.0	0.0
Kentucky........	88	0	1	0.0	0	8	0.0	0.0
Louisiana........	191	1	2	0.5	0	21	0.0	0.5
Maryland........	193	1	2	0.5	1	17	0.5	1.0
Massachusetts...	97	0	3	0.0	2	10	2.1	2.1
Michigan..... ...	195	0	2	0.0	0	23	0.0	0.0
Minnesota.......	201	0	1	0.0	0	35	0.0	0.0
Missouri.........	206	0	2	0.0	0	9	0.0	0.0
Nebraska........	99	1	2	1.0	0	4	0.0	1.0
New York........	687	22	8	3.2	40	29	5.8	9.0
North Carolina..	98	0	2	0.0	0	15	0.0	0.0
Ohio.............	345	3	3	0.8	0	21	0.0	0.8
Oklahoma.......	82	0	1	0.0	0	4	0.0	0.0
Oregon..........	40	1	1	2.5	1	10	2.5	5.0
Pennsylvania....	328	0	6	0.0	0	31	0.0	0.0
South Carolina..	59	0	1	0.0	0	3	0.0	0.0
Tennessee........	142	0	3	0.0	0	6	0.0	0.0
Texas............	293	7	3	2.3	1	19	0.2	2.7
Utah.............	29	0	1	0.0	0	5	0.0	0.0
Vermont.........	16	0	1	0.0	0	2	0.0	0.0
Virginia..........	139	0	2	0.0	0	3	0.0	0.0
Washington.....	60	0	1	0.0	0	18	0.0	0.0
Wisconsin........	130	0	2	0.0	0	26	0.0	0.0
Subtotals.......	5,468	48	70	0.8	61	467	1.1	1.9
States Without Four Year Medical Schools								
Arizona..........	9				1	9	11.1	
Delaware.........	23				0	15	0.0	
Florida..........	371				29	59	7.8	
Idaho............	1				0	0	0.0	
Maine............	20				0	8	0.0	
Mississippi.......	65				0	22	0.0	
Montana.........	5				0	4	0.0	
Nevada..........	0				0	0	0.0	
New Hampshire..	7				0	3	0.0	
New Jersey.......	52				2	15	3.8	
New Mexico......	2				0	2	0.0	
North Dakota...	38				0	14	0.0	
Rhode Island....	15				2	9	13.3	
South Dakota...	20				0	8	0.0	
West Virginia....	42				0	23	0.0	
Wyoming........	2				0	2	0.0	
Alaska, Hawaii, Puerto Rico and Virgin Islands.	63				4	34	6.3	
Subtotals.....	735				38	227	5.1	

Consolidated Examinations

A combination of the results of individual schools for two groups—those appearing for the state medical board examinations and for part III of the examinations of the National Board of Medical Examiners is given in table 6. This table probably represents a more accurate anaylsis of the performance of physicians from the individual schools in licensing examinations than is given in tables thus far presented. In some instances, it will be noted, schools having a high percentage of failures before state licensing boards had few, if any, failures before the National Board. In 1950 there were 4,808 graduates of approved medical schools in the United States examined by state boards of whom 147, 2.9 per cent failed. In the same calendar year, 1,686 graduates of these institutions appeared for part III of the examinations of the National Board of Medical Examiners of whom 14, or 0.8 per cent failed. Only one graduate of any approved school failed in more than one state in 1950. In the consolidated figures the failures from approved medical schools in the United States were reduced from 2.9 per cent to 2.4 per cent.

Of the Canadian graduates, 8.5 per cent failed state board tests and 7.9 per cent failed the combined tests. Only 15 graduates of foreign medical schools were tested by the National Board. There is no comparison to be made of this group. There was only one candidate in the extinct medical school classification examined by the National Board. The National Board does not admit to its examinations the graduates of unapproved medical schools in the United States or schools of osteopathy. Only 15 graduates of foreign medical faculties were admitted to the National Board's final examination while 799 were examined by state licensing boards.

As mentioned in the previous section, the total of all examined before medical licensing boards in the United States in 1950 was 6,203, of whom 5,481 passed and 722, or 11.6 per cent failed. For both groups—state boards and the National Board—7,955 were examined; 7,217 passed and 738, or 9.2 per cent, failed. The total percentage of failures was reduced less than 3.0 per cent because of the high percentage of failures before state boards by graduates of unapproved medical schools, schools of osteopathy and foreign medical graduates. Of the failures among approved medical schools before state boards, 94 were graduates within the last five years and 66 were graduates before 1946.

Failures in Medical Licensure Examinations

Data recorded in table 7 refer to failures before medical examining boards by licentiates of 1950. In presenting these statistics the United States is divided into two groups—the thirty-two states and the District of Columbia in which approved four year medical schools are located and those states and the territories and outlying possessions which have no medical schools within their boundaries. The figures include the total number examined, the number of licentiates who failed state board examinations prior to licensure and were graduates of a medical school located in the state in which they were examined and also the number of graduates licensed in a given state who obtained their professional training in schools in other states.

Practically all states require the applicant to receive a general average of 75 per cent in the medical license examination and at least 50 per cent in any one subject. In case of failure in not more than two subjects the applicant is permitted a second examination in those subjects within twelve months. A few states consider such persons as conditioned in the subjects in which they fail and do not report them to the office of the Council on Medical Examination and Hospitals as failures. These examinees are not included in any of the tabulations which include failures. When their grades are raised after a successful reexamination they are recorded among those who passed.

Of the 6,203 examined for licensure in 1950, there were 48 physicians who failed examinations in the state in which they obtained their professional training. This occurred in thirteen states. Twenty-two failed in New York. There were failures reported by nine states among physicians who graduated from approved medical schools located in states other than the one in which they were licensed. Again, New York had the greatest number 40. Eighteen states had no failures in either group, seven states had failures in both groups.

In the sixteen states and the territories and outlying possessions which do not have medical schools, five boards reported failures. In all, 38 failed.

The total examined in the first group, states in which approved medical schools are located, was 5,468 while in the second group, states which have no approved four year medical school within their boundary, 735 were examined.

In table 8 the figures pertaining to failures before medical licensing boards are subdivided by the number of candidates who were licensed after previous failures. The figures are presented for four categories—approved medical schools in the United States and Canada, foreign faculties of medicine, unapproved medical schools and schools of osteopathy. These groups are classified according to the number licensed after failing a state board examination once and after two or more failures. The table further indicates whether the single and multiple failures have been in the state where licensed or elsewhere. The total number of candidates licensed after examination or by endorsement of credentials is shown and also the total number of failures in all groups.

TABLE 8.—*Failures Before Medical Licensing Boards by Licentiates, 1950*

		Approved Schools					Foreign Schools					Unapproved Medical Schools					Schools of Osteopathy					
		Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			
	Licenses Issued by Examination, Reciprocity or Endorsement	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Total Failures by Licentiates, 1950
Alabama	128	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Arizona	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Arkansas	116	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
California	1,356	9	14	2	1	..	2	..	8	..	1	..	..	..	..	..	..	..	..	..	..	37
Colorado	155	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Connecticut	240	1	1	..	..	..	..	2	1	2	1	..	..	..	..	..	..	..	..	..	..	8
Delaware	30	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
District of Columbia	178	..	1	..	1	..	..	2	..	4	..	..	..	..	..	..	..	..	..	..	..	8
Florida	332	3	2	1	2	1	1	1	..	..	..	1	..	1	..	2	..	..	..	..	..	15
Georgia	225	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Idaho	56	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Illinois	645	4	2	..	..	..	6	10	..	..	3	..	..	..	..	..	..	..	..	..	..	25
Indiana	246	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2
Iowa	185	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Kansas	159	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Kentucky	164	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Louisiana	273	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Maine	74	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
[illegible]	323	..	..	..	1	..	2	2	..	1	4	..	..	..	..	..	..	..	..	..	..	10
[illegible]	305	..	3	1	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	8
[illegible]	420	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
[illegible]	348	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2
[illegible]	132	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
[illegible]	350	..	3	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4
[illegible]	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
[illegible]	129	4	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	7
[illegible]	19	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
New Hampshire	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
New Jersey	273	..	5	2	4	..	..	6	2	3	..	..	..	..	..	..	3	1	2	..	..	28
New Mexico	72	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
New York	1,161	20	1	12	..	..	36	3	45	..	4	1	..	..	..	2	6	..	1	..	..	131
[illegible]	230	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
[illegible]	44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Ohio	611	..	..	..	1	..	2	6	..	9	1	..	..	..	..	..	4	..	..	..	..	23
Oklahoma	121	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Oregon	95	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
[illegible]	587	2	5	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	9
[illegible]	31	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2
[illegible]	104	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
[illegible] Dakota	45	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Tennessee	256	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Texas	752	8	5	..	1	..	1	..	..	2	..	..	..	..	..	..	2	..	3	1	..	23
Utah	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Vermont	43	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Virginia	206	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Washington	185	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
West Virginia	109	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Wisconsin	262	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Wyoming	29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Alaska, Guam, Hawaii, Puerto Rico and Virgin Islands	116	1	..	..	..	..	1	1	..	..	..	..	1	..	..	1	..	..	..	..	..	5
Totals	12,209	58	61	18	22	3	51	39	56	23	16	2	1	5	0	5	15	2	6	2	0	385

There were 12,209 licenses to practice medicine issued during the calendar year 1950. There were 385 physicians represented in the 12,209 licenses issued who had previously been unsuccessful before a licensing board. From the approved schools 162 had previously failed a state board examination. Fifty-eight had one failure in the state in which they were licensed, while 61 were licensed after one failure in another state. Forty-three were licensed after more than one failure.

In the group of foreign medical faculties, 185 graduates were licensed after previous failure. Also, 13 graduates of unapproved medical schools and twenty graduates of schools of osteopathy were registered after previous failure.

Ten physicians had more than 10 failures before securing licenses. One of these was a graduate of an approved medical school in the United States with thirteen failures; three were graduates of unapproved schools and schools of osteopathy, one of whom had eleven previous failures and two had thirteen failures each. Six graduates of foreign faculties of medicine had failures ranging from 10 to 17. In general, the state licensing boards impose no restrictions on the number of examinations which may be taken prior to license but most states have a set limit of three tests.

TABLE 9.—*Reciprocity and Endorsement*

Marginal Number	The Examining Board of	Reciprocates with, or Endorses Certificates Granted by																														Marginal Number
		Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	*Dist. of Columbia*	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	
1	Alabama	..	..	+	+	+	..	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	1
2	Arizona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
3	Arkansas (regular board)	+	+	..	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	+	3
4	*California*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
5	Colorado	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	Connecticut (reg. & homeo. bds.)	..	..	..	..	..	..	..	+	..	..	+	..	+	..	+	..	+	+	+	+	+	..	..	..	..	..	..	+	..	..	6
7	Delaware (regular board)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
8	District of Columbia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
9	Florida	No reciprocity or endorsement policies											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	Georgia	+	..	+	+	+	..	..	+	..	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	10
11	Idaho	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
12	Illinois	+	..	+	+	+	..	..	..	..	..	..	..	..	+	+	+	+	+	+	..	+	..	+	+	..	+	+	..	+	..	12
13	Indiana	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
14	Iowa	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	14
15	Kansas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15
16	Kentucky	+	..	+	+	+	..	+	+	..	+	..	+	+	+	+	..	+	+	+	..	+	+	+	+	+	+	+	+	+	+	16
17	Louisiana (reg. & homeo. bds.)	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	+	+	+	17
18	Maine	..	..	+	+	+	..	..	..	..	+	..	..	..	..	..	..	+	..	+	..	+	+	..	+	+	+	+	..	..	+	18
19	Maryland (reg. & homeo. bds.)	+	..	+	+	..	+	..	+	..	+	+	+	+	+	+	+	+	+	..	+	+	..	+	+	+	+	+	+	+	+	19
20	Massachusetts	+	..	..	..	..	+	+	+	..	+	+	..	+	+	+	+	+	..	+	..	..	..	+	+	+	..	..	+	+	..	20
21	Michigan	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	21
22	*Minnesota*	+	+	+	+	+	+	+	..	..	+	+	..	+	+	..	+	+	+	..	+	+	..	+	+	+	+	+	+	+	+	22
23	Mississippi	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	23
24	Missouri	+	..	..	+	..	..	..	..	..	+	+	+	+	+	+	+	+	+	+	..	+	+	+	..	..	+	+	..	..	..	24
25	Montana	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25
26	Nebraska	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	26
27	Nevada	+	..	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	..	+	+	..	27
28	New Hampshire	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
29	*New Jersey*	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	29
30	New Mexico	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	30
31	New York	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
32	North Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	North Dakota	+	..	+	+	+	..	..	..	..	+	..	+	+	+	+	+	+	+	..	..	+	..	..	+	+	+	+	+	+	+	33
34	Ohio	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	34
35	Oklahoma	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	Oregon	+	+	+	+	+	+	+	..	..	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	36
37	Pennsylvania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	Rhode Island	..	+	+	+	+	+	..	..	..	..	+	+	+	+	+	+	..	..	+	+	+	+	+	+	..	+	+	+	+	..	38
39	South Carolina	+	..	..	..	..	..	..	+	..	+	..	..	+	..	+	+	+	+	+	..	+	..	+	+	..	+	..	+	+	..	39
40	South Dakota	+	+	+	+	+	..	..	..	..	+	..	..	+	+	+	+	+	..	..	..	+	+	+	..	+	+	+	..	..	+	40
41	Tennessee	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	..	+	+	+	41
42	Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42
43	Utah	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	43
44	Vermont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44
45	Virginia	+	..	+	+	..	..	+	+	..	+	..	..	+	+	+	+	+	+	+	..	+	+	+	..	+	..	..	+	+	+	45
46	Washington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46
47	West Virginia	+	..	+	38	38	+	+	+	..	+	..	38	38	+	+	+	+	+	+	88	+	+	+	+	+	+	+	..	+	..	47
48	Wisconsin	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
49	Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Alaska	+	..	+	+	+	+	..	+	..	..	..	..	+	..	+	+	..	..	+	..	+	+	+	+	..	..	+	+	+	..	50
51	*Hawaii*	*No reciprocal relations..*							..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	Puerto Rico	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	+	..	+	..	..	..	..	+	..	..	..	..	52

This summary should be supplemented by direct communication with the

Some states have additional requirements for graduates of schools *outside* the United States and Canada.

+, indicates reciprocal or endorsement relationships have been established; .. indicates no reciprocal or endorsement relationships have been established. (See column—"At the discretion of the board.")

1. 1st P, first papers required; ⊕, in citizenship column indicates full citizenship required, in other columns it implies a requirement.
2. In most cases there is a small additional recording or registration fee.
3. Year of practice after internship required.
4. Internship accepted in lieu of one year's practice.
5. Professional practice required.
6. All applicants must be graduates of a medical school approved by the American Medical Association.
7. Just preceding application.
8. No basic science reciprocity—examination must be within the state.
9. Basic science certificate required either by reciprocity or examination in addition to basic science subjects of National Board.
10. Canadian citizens are required to file first papers.
11. Not applicable to citizens of Canada.
12. Oral examination required when original license is ten or more years old.
13. Applicant must have resided in the state used as basis of application for one year after date on said certificate, or show two years of licensed practice in some other state.
14. Oral examination required.
15. Graduates of foreign medical schools must have fulfilled all requirements of California prior to admittance to examination for any certificate used as basis of application in California and pass an oral, clinical and written examination.
16. Actual practice for a period of three years immediately preceding date of application.
17. Practical, clinical examination required.
18. Foreign graduates only.
19. Regular and Homeopathic boards.

Registration by Reciprocity and Endorsement

A summary of the reciprocity and endorsement policies pertaining to medical licensure in effect in the United States, Alaska, Hawaii and Puerto Rico are included in table 9. Florida is the only state which requires all applicants for licensure to pass a written examination. Hawaii does not have reciprocal relations with any state but will endorse physicians certified by the National Board of Medical Examiners. Those desiring licenses by reciprocity and endorsement in seventeen states, the District of Columbia and Alaska are required to obtain a certificate from the state board of examiners in the basic sciences before being eligible for licensure. In the section of these statistics pertaining to basic science boards there is included a table which outlines the reciprocity, endorsement, exemption or waiver policies of the boards of examiners in the basic sciences.

Thirty states, Alaska and Puerto Rico have definite reciprocal agreements with specific states. Thirty-five boards including nineteen which have specific reciprocity agreements, are given discretionary powers under the medical practice acts. These boards will register physi-

Policies of Medical Licensing Boards

Marginal Number	Reciprocates with, or Endorses Certificates Granted by																							Requirements						Miscellaneous	Marginal Number
	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska	Puerto Rico	At the Discretion of the Board	National Board of Medical Examiners	Basic Science Certificate	Internship	Professional Practice	Citizenship [1]	Fees, Dollars [2]		
1	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	..	⊕	1[4]	⊕[11]	50	..	1
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	⊕[8]	⊕	3[4,7]	1st P	100	42	2
3	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	..	+	+	+	+	..	..	+[9]	⊕	..	1[4]	⊕	50[22]	42	3
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	[41]	1[13]	⊕[21]	100	12,15	4
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[43]	+[9]	⊕	⊕	1[4]	⊕	50	42	5
6	..	..	..	+	..	..	+	+	..	..	+	+	..	+	..	..	+	..	..	..	..	+	+[27]	⊕[10]	..	3[10]	1st P[10]	50	..	6
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[5]	..	⊕	2	⊕	100	..	7
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[27]	⊕	⊕	1[3]	..	50	..	8
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	⊕	..	..	⊕	..	..	9
10	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	..	+	..	..	0	⊕	50	..	10
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	..	⊕	100	..	11
12	..	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	..	..	+[17]	..	⊕	1	1st P	25	17,42	12
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	1[4]	..	50	..	13
14	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	..	..	+	⊕	⊕	1[4]	⊕[11]	50	..	14
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	1[4,7]	⊕	50	42	15
16	..	..	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	..	+	..	..	1[4]	⊕	50	42	16
17	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	..	..	+[25]	..	[33]	1[4]	1st P[40,10]	50[22]	42	17
18	..	..	+	..	+	..	+	..	+	..	+	..	+	+	+	..	+	+	+	..	..	..	+[14]	..	..	1[4]	⊕[11]	50	..	18
19	+	+	..	+	+	+	+	..	+	..	+	+	..	+	+	..	+	+	..	+	..	+	+	..	..	1[4]	1st P	50	42	19
20	+[44]	+	..	+	+	..	+	+	+	..	+	+	+	+	+	..	+	+	..	..	..	+	+	..	..	0	1st P	50[28]	..	20
21	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+[35]	⊕[37]	⊕	1[4]	..	50	34	21
22	+	+	..	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	+	+	⊕	..	0	1st P	75	17,42	22
23	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	..	..	..	⊕[11]	50	42,11	23
24	..	..	+	+	..	..	..	..	..	..	+	..	+	..	..	+	+	+	..	+	..	+	+[39]	..	⊕[33]	1[4]	⊕	50	..	24
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	1[4]	⊕	75	42	25
26	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	..	..	+[36]	⊕	..	1[4]	⊕	50	..	26
27	+	..	..	+	+	+	+	+	..	+	+	+	+	+	..	+	+	+	..	+	..	..	+	..	⊕	1[4]	⊕	200	14,42	27
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	0	⊕[11]	50	..	28
29	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	..	⊕	0	⊕	100	..	29
30	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	⊕	..	1[4]	1st P	50	..	30
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	2	1st P	25	..	31
32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	0	..	50	42,6	32
33	..	+	..	+	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	+	..	..	+	..	⊕	1	⊕	50[22]	14,42	33
34	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	..	..	1[4]	1st P	50	..	34
35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	⊕[32]	⊕	1[4]	⊕	100	42,11,6	35
36	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+[20,23]	+[9,27]	⊕	⊕	1[4]	⊕	100	..	36
37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	2[24]	1st P	50	42	37
38	..	+	..	+	+	..	+	..	..	..	+	..	..	+	..	+	+	+	+	..	..	+[14]	+[14]	⊕	⊕	0	1st P	20	14	38
39	..	+	..	+	+	+	+	..	..	..	+	+	..	..	+	+	+	+	+	..	+	..	+[14]	..	..	1[4]	⊕	50	42	39
40	..	+	+	+	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	..	..	..	+	⊕	⊕	1	1st P	50	..	40
41	+	+	..	+	+	..	+	..	+	+	..	+	+	..	+	+	+	+	+	..	..	..	+[30]	⊕	..	0	⊕	50	42	41
42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	⊕	..	0	..	50	..	42
43	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	..	+	+	..	⊕	[31]	..	50	42	43
44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[38]	..	⊕	1[3]	⊕	50	..	44
45	..	+	..	+	+	..	+	..	+	+	+	+	..	+	..	+	+	+	..	..	..	+	+	..	⊕[18]	2[26]	1st P[11]	50	..	45
46	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[8]	⊕[8]	⊕	0	..	25	..	46
47	..	+	+	+	+	+	+	[38]	+	+	+	+	+	+	+	..	..	+	+	+	..	..	+	..	⊕	0	⊕	100	..	47
48	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	..	+	+[14]	..	⊕	⊕	1[29]	1st P	50[22]	..	48
49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	+[14]	..	⊕	0	⊕	50	..	49
50	..	+	+	+	+	+	..	..	..	..	+	+	+	+	+	+	+	+	..	..	..	..	+	⊕	⊕	0	⊕	100	6	50
51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	⊕	..	⊕	25	42,6	51
52	+	..	+	..	..	..	+	..	+	..	..	..	..	..	..	..	..	+	..	..	..	+[3]	+	..	⊕	1[3]	⊕	30	..	52

secretary of the licensing board of the state in which the physician is interested.

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20. Reciprocity is extended to all states which accept Oregon licentiates on reciprocity basis.
21. Not required if country in which applicant is licensed will admit to practice citizens of the United States licensed to practice in some state or on proof of requirements similar to those required by California for graduates of foreign medical schools.
22. Fee same as applicant's state charges if more than $50.
23. Oral examination required if applicant's state requires it.
24. If the applicant passes the examination in the state from which he transfers *after* the completion of his internship, no practice is required.
25. License in state with which Louisiana reciprocates required.
26. Internship accepted—considered equivalent to two years' practice.
27. Fee, $25.
28. Fee for license on basis of National Board certificate, $25.
29. A two year internship is accepted.
30. Diplomates of National Board not required to have been in practice for three years.
31. Same as required of candidates of state applying for licensure.
32. Not required for licensure by reciprocity.
33. Reciprocity applicants only.
34. Supplemental examination required in certain cases when accepting the examination of a state with whom reciprocal relations have not been established.
35. May be licensed after a special (written) supplemental examination.
36. Fee $50.
37. For matriculants after Oct. 15, 1937.
38. Licentiates of California, Colorado, Indiana, Iowa, Massachusetts and Rhode Island accepted on reciprocal basis at discretion of board.
39. Fee, $15.
40. Permanent license withheld until completion of citizenship.
41. Graduates of foreign medical schools effective Sept. 15, 1935. Canadian schools exempted effective Sept. 19, 1939.
42. Graduates of foreign medical schools are not accepted.
43. Reciprocity extended at discretion of board to states having comparable licensing requirements and which accept Colorado applicants on a substantially equal reciprocal basis.
44. If registered after July 1, 1945.

TABLE 10.—*Candidates Licensed by Reciprocity and Endorsement of Credentials, 1950*

Source of Former License or Credentials

Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
States Issuing Licenses by Reciprocity or Endorsement	Total Licensed	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Govt. Services	National Board of Medical Examiners	Alaska, Guam, Hawaii, Puerto Rico and Virgin Islands	Canadian, Foreign	Special Exemption
Alabama	92	..	..	2	..	..	..	..	..	..	12	..	6	1	..	..	1	11	..	2	..	3	..	1	7	..	1	..	..	2	..	4	1	..	1	..	..	6	..	4	..	19	1	..	..	1	..	..	..	..	..	6	..	..	..
Arizona	50	..	..	..	2	1	..	1	..	..	..	..	4	..	1	..	1	..	..	2	1	7	6	..	2	..	1	..	..	1	..	1	1	..	3	..	..	3	..	..	..	..	2	..	..	2	1	..	..	..	..	7	..	..	..
Arkansas	42	..	..	..	3	2	..	..	..	..	1	..	2	..	..	..	1	2	..	1	..	2	1	..	3	..	1	..	..	..	..	..	3	..	..	3	1	1	..	..	..	6	3	..	..	2	..	..	..	..	..	3	..	1	..
California	837	2	..	7	..	7	4	..	1	3	1	2	101	14	17	18	10	12	2	10	4	36	39	2	22	1	12	1	1	6	1	43	3	2	42	10	9	38	2	2	2	15	14	10	2	7	6	1	19	..	39	229	6	..	..
Colorado	79	..	..	1	2	..	2	..	..	..	..	..	9	2	3	4	..	1	2	1	..	3	4	1	3	..	10	..	..	..	..	..	..	..	1	2	..	2	..	..	..	1	..	..	..	1	1	..	2	..	..	20	1	..	..
Connecticut	216	2	..	2	1	..	..	..	..	..	..	..	3	4	2	..	..	3	2	5	3	4	..	..	..	..	2	..	1	4	..	26	1	..	5	..	..	5	1	..	..	1	1	..	2	2	..	1	..	..	..	133	..	..	..
Delaware	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Dist. of Columbia	154	1	..	..	2	..	1	1	..	..	3	..	3	..	..	..	..	3	1	19	2	1	..	..	3	..	1	..	..	2	..	6	4	..	5	..	..	13	..	..	..	4	2	..	..	12	..	1	..	..	..	63	..	..	1
Florida	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	..
Georgia	78	2	..	..	2	..	..	..	1	..	..	..	2	..	1	..	5	6	..	7	..	1	2	1	4	..	..	..	..	..	..	..	7	..	2	..	..	4	..	5	..	7	..	..	2	6	..	..	..	..	..	11	..	..	..
Idaho	54	..	..	..	5	6	..	..	..	..	..	..	2	..	1	2	..	..	..	..	..	..	4	1	2	..	3	..	..	..	..	1	..	..	1	1	2	1	..	..	..	1	3	3	..	..	1	..	1	..	..	13	..	..	..
Illinois	251	2	..	2	11	2	..	..	2	..	..	..	..	13	5	1	3	5	1	4	..	6	1	..	16	..	4	1	..	..	..	..	1	..	19	1	1	15	..	..	..	2	3	1	..	..	..	1	16	..	8	104	..	..	..
Indiana	134	..	..	..	1	1	..	..	..	..	..	..	26	..	4	3	13	..	..	5	..	5	1	..	5	..	..	..	..	..	..	..	1	1	20	1	1	6	..	1	..	5	2	..	..	2	..	..	4	..	..	26	..	..	..
Iowa	124	1	..	1	5	2	..	..	1	..	1	..	14	1	..	1	4	2	..	4	..	1	5	2	4	..	12	..	..	..	..	3	..	..	7	2	1	3	..	1	1	3	3	1	..	..	1	1	3	..	..	33	..	..	..
Kansas	63	..	..	1	1	..	..	1	..	..	1	..	2	3	..	..	2	3	1	1	..	2	..	1	8	..	4	..	..	..	..	..	..	..	2	..	5	..	..	..	..	..	2	1	..	3	..	..	5	..	..	14	..	..	..
Kentucky	75	..	..	..	1	..	..	..	..	..	1	..	2	4	1	1	..	..	..	2	..	..	2	1	3	..	1	..	..	..	..	2	2	..	10	..	1	6	..	2	..	16	..	..	..	4	..	1	..	..	..	12	..	..	..
Louisiana	84	..	..	5	1	1	3	..	2	..	1	..	3	2	..	2	3	..	..	1	2	3	1	4	1	1	..	..	..	1	..	10	5	..	4	2	..	3	..	..	..	9	6	..	..	6	..	..	2	..	..	...	..	..	..
Maine	55	..	..	..	1	..	1	..	1	..	..	..	2	..	..	..	..	..	..	2	..	..	..	..	1	..	1	..	..	3	..	..	..	1	..	..	..	5	..	..	..	..	..	..	3	2	..	..	..	..	..	32	..	..	..
Maryland	133	..	..	..	9	2	1	..	8	..	1	..	5	2	1	1	1	3	1	..	..	3	..	..	3	..	..	..	..	1	..	6	1	..	1	..	..	14	..	1	..	1	..	..	1	8	..	1	..	..	..	57	..	..	..
Massachusetts	265	1	..	..	..	..	2	1	..	..	1	..	..	..	..	1	2	1	..	15	..	..	..	..	2	..	..	..	2	3	..	16	..	..	8	1	..	9	5	..	..	2	..	..	2	3	..	..	2	..	..	186	..	..	..
Michigan	264	..	..	4	8	6	1	..	1	..	1	..	22	9	6	3	3	4	..	7	3	..	9	..	17	..	7	..	..	3	..	6	5	1	21	3	2	23	..	..	..	6	9	3	..	6	3	..	9	..	..	53	..	..	..
Minnesota	147	..	2	1	6	2	..	..	..	..	1	..	..	..	3	..	3	2	..	..	..	1	..	2	5	1	9	..	..	..	..	3	1	..	2	5	2	2	..	..	3	1	4	1	..	2	..	..	3	..	..	80	..	..	..
Mississippi	69	1	..	3	1	..	..	..	..	..	2	..	2	1	..	..	3	16	..	1	..	3	..	..	1	..	..	..	..	..	..	5	..	..	1	..	..	..	..	3	..	12	..	..	..	..	..	..	..	..	..	7	..	7	..
Missouri	148	..	1	8	5	..	..	..	..	..	1	..	16	4	1	35	5	4	1	1	1	..	3	1	..	..	4	..	..	..	..	1	..	..	3	2	..	4	..	..	1	12	5	..	..	..	1	1	7	..	..	20	..	..	..
Montana	35	..	1	..	3	4	..	..	..	..	..	1	3	..	..	1	..	1	..	1	..	2	2	..	3	..	4	..	..	..	..	..	..	..	3	..	3	..	1	.	1	..	..	..	..	..	..	1	..	..	..	...	..	..	..
Nebraska	33	..	..	..	3	4	..	..	..	..	..	..	2	..	4	2	1	..	..	..	..	..	3	..	..	..	..	..	..	..	..	3	..	..	..	..	..	1	..	1	1	..	..	1	..	..	..	..	..	..	..	7	..	..	..
Nevada	19	..	..	..	5	..	..	..	1	..	..	..	..	1	..	..	1	..	..	..	..	1	..	1	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	4	..	..	..
New Hampshire	47	..	..	..	..	..	3	..	..	..	..	..	..	..	1	..	..	..	3	1	8	..	..	1	..	..	..	..	..	1	..	2	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	22	..	2	..
New Jersey	232	..	..	..	3	2	..	2	..	..	2	..	2	..	..	..	1	3	1	9	1	6	2	..	2	..	1	..	..	..	..	40	2	..	4	..	..	39	..	..	..	3	1	..	1	4	..	..	..	..	..	101	..	..	..
New Mexico	70	..	..	..	4	5	..	..	..	..	..	..	8	2	2	2	..	1	..	2	1	..	3	1	3	..	..	..	..	..	..	6	1	..	4	2	..	3	..	..	..	1	6	..	..	..	..	..	1	..	..	12	..	..	..
New York	871	..	..	..	15	4	1	1	2	..	1	..	4	3	..	..	2	10	..	21	5	15	7	..	2	..	3	..	..	7	..	..	4	1	7	..	..	36	..	..	..	8	6	..	5	15	..	2	8	..	..	642	11	..	23
North Carolina	133	2	..	1	1	..	..	..	1	..	4	..	6	..	..	..	4	8	..	8	..	2	4	..	..	..	2	..	..	..	..	7	..	..	6	2	..	9	..	6	..	10	..	1	..	11	..	3	2	..	..	33	..	..	..
North Dakota	9	..	..	..	2	..	..	..	..	..	..	..	3	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..
Ohio	297	..	..	2	7	1	1	..	..	1	3	..	17	9	3	2	14	5	..	9	5	17	9	..	24	..	1	..	2	4	..	26	3	1	..	..	..	26	..	2	..	7	2	..	..	9	2	3	4	..	..	75	1	..	..
Oklahoma	63	1	..	5	2	..	..	..	..	..	..	..	4	..	1	3	..	3	1	1	..	..	2	1	8	..	2	..	..	1	..	..	..	..	1	..	..	3	..	3	..	5	7	..	..	2	..	..	2	..	..	5	..	..	..
Oregon	57	..	..	..	5	1	..	..	..	..	..	..	5	..	1	..	..	..	..	1	..	4	8	..	1	..	3	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	1	..	..	..	2	..	5	..	..	17	..	..	..
Pennsylvania	262	1	..	..	3	..	1	1	..	1	1	..	8	2	..	3	1	4	2	15	..	9	3	..	5	..	1	..	..	13	..	14	3	..	10	..	..	..	1	3	..	5	2	3	1	2	..	2	4	..	1	135	2	..	..
Rhode Island	19	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	..	..	..
South Carolina	45	2	..	..	..	..	..	..	1	..	8	..	..	2	..	1	2	4	..	2	..	..	1	..	..	..	..	..	..	..	..	..	3	..	2	..	..	2	..	..	..	5	..	..	..	3	..	1	..	..	..	6	..	..	..
South Dakota	25	..	..	..	1	..	..	..	..	..	..	..	..	..	4	1	1	..	..	..	..	3	2	..	..	..	2	..	..	..	..	..	1	2	..	1	..	..	..	..	..	..	..	1	..	..	1	..	2	..	..	3	..	..	..
Tennessee	81	..	..	4	2	1	..	..	1	..	5	..	2	..	..	..	3	2	..	..	..	1	2	5	1	..	..	..	..	..	..	4	6	..	2	..	...	7	..	4	..	..	1	..	..	11	..	1	2	..	..	14	..	..	..
Texas	421	1	2	28	11	3	..	..	1	..	7	..	27	10	9	5	8	47	1	7	..	10	15	8	22	..	4	1	..	4	1	26	9	..	16	12	2	14	1	3	..	19	..	1	1	7	1	1	9	..	3	63	1	..	..
Utah	48	..	..	..	5	..	..	2	..	..	..	..	3	..	1	1	1	1	..	1	..	..	3	..	4	..	..	..	..	..	..	3	..	..	2	1	..	3	..	..	..	..	2	..	..	2	..	..	..	..	2	11	..	..	..
Vermont	30	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	5	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	..	..	..
Virginia	128	1	..	2	3	..	..	..	11	..	4	..	4	2	..	..	3	1	..	11	1	1	1	..	3	..	1	..	..	..	..	8	8	..	3	1	..	8	..	1	..	10	..	..	..	1	..	4	1	..	6	28	..	..	..
Washington	125	..	..	..	19	5	..	..	..	..	..	..	..	1	2	..	1	4	..	3	..	2	10	..	14	..	13	..	..	..	..	..	..	..	4	1	10	2	..	..	..	3	..	..	..	1	..	..	2	..	..	28	..	..	..
West Virginia	67	..	..	..	..	1	..	..	1	..	..	..	3	2	1	..	3	1	..	4	..	1	1	1	2	..	3	..	..	..	..	..	..	..	4	..	..	14	..	..	..	3	..	..	1	13	..	..	1	..	..	7	..	..	..
Wisconsin	132	..	..	..	3	1	..	..	..	..	..	..	14	..	1	..	..	2	..	..	..	5	7	..	1	..	2	..	..	1	..	2	..	1	5	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	82	...	2	..	..
Wyoming	27	..	..	..	..	3	..	..	..	..	..	..	2	1	1	..	1	..	..	..	..	3	1	..	2	..	4	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	4	..	..	..
Alaska, Hawaii, Puerto Rico and Virgin Islands	68	..	..	..	3	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	..	2	..	..	1	..	..	..	..	..	..	2	..	..	1	1	..	..	..	..	..	..	..	..	1	..	3	..	..	..	..	32	1	..	7
Totals	6,755	20	6	81	168	67	22	10	36	5	63	3	313	96	77	93	109	175	19	191	40	166	164	35	211	3	119	3	6	59	2	283	76	10	236	56	40	334	12	42	9	203	88	30	24	150	21	20	118	0	111	2,395	25	10	31
Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55

cians who present credentials which correspond with those required by their respective states in the year issued.

The states in which physicians certified by the National Board of Medical Examiners are accepted for licensure on the basis of the board's certificate are also indicated. All states but Florida, Montana, Texas and Wisconsin accept the National Board's certificate.

Additional requisites, such as professional practice, citizenship regulations, oral examination and internship are recorded, as is also the fee for a license without written examination. In some states physicians of Canadian birth are exempt from the citizenship requirement. This is indicated by a footnote. Few states will accept graduates of foreign faculties of medicine on a reciprocal basis. Other requirements or exemptions are indicated by footnotes.

This chart will be available in reprint form. It has proved to be of material assistance to physicians contemplating locating in another state. The data recorded are intended to be merely a summary of licensure policies. A physician using this chart for reciprocal purposes should supplement the information contained therein by direct communication with the executive officer of the licensing board of the state in which he is interested. A list of the executive officers in charge of medical licensure appears elsewhere in this study.

Table 20 (page 360) contains a schedule indicating when the boards will issue licenses by reciprocity.

In table 10 are presented data pertaining to the credentials accepted as the basis for licenses granted without written examination in 1950. There were 6,755 so registered on the basis of licenses issued by other states, the District of Columbia, the territories or outlying possessions, foreign countries, government services, the certificate of the National Board of Medical Examiners and special exemption. The number of licenses issued by this method again exceeded any pre-war year, although it was 174 fewer than the number so licensed in 1949. The greatest number of licenses were issued by this method in New York where 871 were registered. California issued 837 and Texas 421. Seven other states endorsed more than 200 candidates, namely Connecticut 216, Illinois 251, Massachusetts 265, Michigan 264, New Jersey 232, Ohio 297 and Pennsylvania 262. The largest number of candidates presenting the same type of credentials were the 2,395 physicians certified by the National Board of Medical Examiners. Of these 642 were certified in New York.

There were 343 licenses issued in Illinois and 334 in Pennsylvania presented to other states for endorsement purposes. No physician holding a New Mexico license applied for registration in another state during the year, only 2 from New Mexico and three each from Montana and Nevada.

One hundred and forty-one medical officers of one of the federal services received licenses by endorsement of their military credentials in seven states. Twenty-five physicians were licensed by eight boards on the basis of a license issued in one of the territories or outlying possessions, 10 on the basis of Canadian or foreign licenses and 31 by special exemption.

In table 11 are recorded the numbers from individual schools represented by the 6,755 reciprocity licentiates. The University of Washington School of Medicine graduated its first class in June 1950 but no graduate applied for licensure either by examination or by reciprocity in 1950. All other approved medical schools in the United States and Canada had graduates licensed without written examination last year. More than 200 graduates of four schools secured such licensure. This table reflects the movement of physicians to states other than the one in which they obtained their professional training.

One hundred and thirty-four graduates of foreign medical schools obtained endorsement of state licenses in 22 states and in Guam, and 83 graduates of schools no longer in operation were registered by 28 boards. Thirteen graduates of unapproved medical schools were licensed in six states and 25 graduates of schools of osteopathy were registered in nine states to practice medicine, surgery or both.

Licentiates Representing Additions to the Medical Profession

Licentiates of 1950 who received their first license to practice medicine and surgery during the calendar year and therefore represent additions to the medical profession in the United States, Alaska, Guam, Hawaii, Puerto Rico and the Virgin Islands are shown in table 12. The figures in this table represent candidates examined in 1950 and licensed, some who were examined in previous years but whose licenses were withheld pending completion of a required internship, citizenship and other technicalities and issued in 1950 and those without a state license who were certified during the year on the basis of the examinations of the National Board of Medical Examiners. The figures also include physicians licensed on the basis of government credentials, Canadian and foreign licenses. The majority represent recent graduates.

There were 6,002 additions to the medical profession in the United States and its territories and outlying possessions. By reference to table 1 it can be noted that 12,209 licenses were issued during the year, indicating that 6,207 had previously been licensed. The number of physicians who died in 1950 was 3,794. Thus the physician population in the United States was increased by 2,208.

Analyzing table 12, it can be noted that New York had the greatest number of first licentiates, 701. California was second with 551. Four states added more than 300 to their physician population, namely Illinois, Ohio, Pennsylvania and Texas. Increases as compared with 1949 figures[1] occurred in 25 states.

The 6,002 licentiates representing additions to the medical profession in the last calendar year represented 4,609 who secured their licenses by examination and 1,393 by endorsement of credentials. The latter were mainly physicians certified by the National Board of Medical Examiners.

Increases in the physician population arranged in nine geographic divisions in the United States are shown in

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[1] J. A. M. A. 143:5 (June 3) 1950.

TABLE 11.—CANDIDATES LICENSED BY

Marginal Number	Marginal Number SCHOOL	1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 Dist. of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana	14 Iowa	15 Kansas	16 Kentucky	17 Louisiana	18 Maine
	ALABAMA																		
1	Medical College of Alabama, Birmingham	1	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..
	ARKANSAS																		
2	University of Arkansas School of Medicine, Little Rock	2	1	..	7	1	2	..	..	..	..	..	2	..	1	2	..	5	..
	CALIFORNIA																		
3	University of California School of Medicine, San Francisco	..	1	..	1	1	..	..	..	..	1	..	1	1	1	..	..	..	..
4	College of Medical Evangelists, Loma Linda-Los Angeles	1	..	4	10	3	..	..	1	..	2	10	1	1	..	2	..	1	..
5	*University of Southern California School of Medicine, Los Angeles.*	..	..	..	..	..	1	..	..	..	..	..	3	..	..	..	..	..	1
6	Stanford University School of Medicine, Stanford University-San Francisco	..	..	..	4	1	..	..	..	..	..	..	1	..	1	..	..	1	..
	COLORADO																		
7	University of Colorado School of Medicine, Denver	..	1	1	7	..	1	..	..	..	..	4	2	2	..	..	..	..	..
	CONNECTICUT																		
8	Yale University School of Medicine, New Haven	..	..	..	11	1	32	..	1	..	..	..	5	3	1	1	..	1	1
	DISTRICT OF COLUMBIA																		
9	Georgetown University School of Medicine, Washington	1	1	..	11	1	4	..	23	..	..	..	..	1	1	..	2	2	1
10	*George Washington University School of Medicine, Washington*	..	..	1	15	1	1	..	18	..	3	2	5	2	..	1	1	..	..
11	Howard University College of Medicine, Washington	3	..	..	6	..	..	..	12	..	1	..	..	..	..	..	..	1	..
	GEORGIA																		
12	Medical College of Georgia, Augusta	5	..	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..
13	Emory University School of Medicine, Emory University	3	..	..	2	..	1	..	2	..	1	1	..	..	2	..	..	1	..
	ILLINOIS																		
14	Chicago Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	*Northwestern University Medical School, Chicago*	3	1	2	41	4	1	..	1	..	..	1	14	8	6	3	1	2	1
16	Stritch School of Medicine of Loyola University, Chicago	..	..	..	11	1	..	..	..	..	1	..	12	6	2	1	..	..	..
17	University of Chicago, The School of Medicine	1	..	1	20	2	3	..	..	..	..	1	4	1	2	1	..	1	2
18	University of Illinois College of Medicine, Chicago	1	3	..	51	3	1	..	1	..	1	1	14	9	7	2	1	..	..
	INDIANA																		
19	Indiana University School of Medicine, Bloomington-Indianapolis	..	..	..	14	2	4	..	..	..	..	..	12	1	2	2	4	2	..
	IOWA																		
20	State University of Iowa College of Medicine, Iowa City	..	1	..	16	3	3	..	1	..	..	..	7	3	10	2	1	..	..
	KANSAS																		
21	University of Kansas School of Medicine, Lawrence-Kansas City	..	..	..	16	4	..	..	1	..	..	3	..	3	..	..	1	2	..
	KENTUCKY																		
22	University of Louisville School of Medicine	1	1	1	16	..	..	..	..	..	5	..	4	13	3	2	1	3	..
	LOUISIANA																		
23	*Louisiana State University School of Medicine, New Orleans*	2	..	..	2	..	1	..	..	..	..	1	1	..	2	1	..	..	..
24	Tulane University of Louisiana School of Medicine, New Orleans	8	1	2	11	1	2	..	2	..	9	..	2	..	1	3	..	4	..
	MARYLAND																		
25	*Johns Hopkins University School of Medicine, Baltimore*	2	..	..	6	..	2	..	6	..	6	..	5	5	1	2	1	1	1
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	..	1	..	7	2	4	..	4	..	..	..	2	2	3	..	1	1	..
	MASSACHUSETTS																		
27	Boston University School of Medicine	1	1	..	8	..	8	..	5	..	..	..	3	1	..	..	1	..	1
28	Harvard Medical School, Boston	3	2	..	32	6	11	..	3	..	2	..	9	..	4	4	..	3	7
29	Tufts College Medical School, Boston	..	..	..	11	1	13	1	..	..	..	..	6	..	1	1	1	1	7
	MICHIGAN																		
30	University of Michigan Medical School, Ann Arbor	1	5	..	25	2	4	..	1	..	1	..	3	4	1	2	..	3	..
31	Wayne University College of Medicine, Detroit	..	1	2	11	1	..	..	..	..	..	..	1	2	..	..	..	1	..
	MINNESOTA																		
32	University of Minnesota Medical School, Minneapolis	..	5	1	30	2	..	..	..	..	2	4	2	1	4	..	1	..	..
	MISSOURI																		
33	St. Louis University School of Medicine	..	3	..	14	..	2	..	1	..	..	..	9	3	1	3	1	..	1
34	Washington University School of Medicine, St. Louis	3	1	2	13	3	..	..	2	..	2	..	7	1	4	3	1	..	..
	NEBRASKA																		
35	Creighton University School of Medicine, Omaha	..	..	..	10	4	1	..	1	..	..	3	5	..	2	1	..	..	..
36	University of Nebraska College of Medicine, Omaha	..	2	1	15	8	1	..	2	..	..	1	3	..	12	3	2	..	1
	NEW YORK																		
37	Albany Medical College, Albany	..	1	..	4	..	4	..	..	..	..	..	3	2	1	..	1	..	1
38	State University of New York, State University Medical Center at New York City, College of Medicine, Brooklyn	..	..	..	15	..	12	..	4	..	..	1	..	..	..	..	..	..	2
39	University of Buffalo School of Medicine	..	..	..	9	..	2	..	3	..	..	1	3	..	..	..	..	2	4
40	*Columbia University College of Physicians and Surgeons, New York*	3	..	1	18	2	16	..	1	..	1	1	8	2	3	..	2	..	2
41	Cornell University Medical College, New York	3	..	..	12	2	11	..	1	..	1	..	4	..	..	..	..	..	1
42	New York Medical College, Flower and Fifth Avenue Hospitals, New York	..	1	..	13	2	8	..	..	..	..	..	3	4	..	..	..	..	1
43	New York U[illegible]	2	8	..	34	..	6	..	..	..	1	..	3	..	2	..	2	1	1
44	University o[illegible]	1	..	..	6	3	3	..	..	..	1	..	1	..	..	..	..	2	..
45	State Univer[illegible] versity, School of Medicine	1	1	..	2	..	3	..	..	..	..	..	5	1	..	..	..	..	..
	NORTH CAROLINA																		
46	Duke University School of Medicine, Durham	1	..	1	7	1	2	..	3	..	3	1	8	..	..	..	..	2	..
47	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	..	1	..	2	..	..	..	1	..	3	..	1	..	1	..	..	3	..
	OHIO																		
48	University of Cincinnati College of Medicine	..	1	..	12	..	..	1	2	..	1	..	5	10	4	..	6	1	..
49	Western Reserve University School of Medicine, Cleveland	..	2	..	8	1	3	..	3	..	1	1	7	3	1	1	..	..	..
50	Ohio State University College of Medicine, Columbus	2	..	..	16	..	1	..	..	..	..	..	6	4	2	..	2	1	..
	OKLAHOMA																		
51	University of Oklahoma School of Medicine, Oklahoma City	..	..	4	10	2	..	..	..	..	..	1	1	1	1	1	1	2	..
	OREGON																		
52	University of Oregon Medical School, Portland	..	..	1	11	..	..	..	1	..	..	1	3	1	3	1	1	..	..
	Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	
Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska, Hawaii, Puerto Rico and Virgin Islands	Totals	Marginal Number
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	5	1
..	..	4	1	3	6	..	..	1	..	2	..	1	1	..	2	3	..	..	2	..	..	4	26	..	..	2	..	..	1	..	..	82	2
3	..	..	..	..	..	..	1	..	1	..	..	3	..	..	1	..	1	1	..	..	..	1	1	1	..	..	2	..	..	..	1	24	3
4	3	5	3	1	6	3	2	..	..	..	1	2	2	1	6	1	4	2	..	..	2	4	12	..	..	1	9	..	1	..	6	117	4
2	2	1	1	..	..	..	..	1	..	..	..	3	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	18	5
1	..	3	3	..	1	..	..	..	..	..	..	5	..	..	..	..	..	2	..	..	..	..	..	..	1	..	1	..	..	..	1	26	6
1	..	5	1	1	..	3	2	..	..	1	5	3	..	..	2	..	2	..	1	..	..	1	4	..	..	..	4	1	3	1	..	59	7
3	5	3	3	..	2	..	..	..	2	1	1	9	..	..	2	..	..	4	1	..	..	1	2	..	1	1	..	1	..	..	1	103	8
11	4	5	..	..	1	..	..	1	1	12	2	22	1	..	3	..	..	6	2	..	..	..	1	..	1	9	..	..	..	1	3	137	9
11	3	5	4	1	1	..	..	1	..	1	..	11	..	..	5	2	1	4	..	2	..	3	5	1	..	13	1	..	3	..	3	131	10
1	1	2	1	..	1	..	..	..	..	1	..	4	2	..	4	..	..	3	..	..	..	1	2	..	..	1	..	..	..	..	1	48	11
..	..	..	..	1	..	..	..	..	..	1	..	..	3	..	..	..	..	1	..	7	..	2	4	..	..	2	..	..	..	..	..	30	12
1	1	1	1	1	..	..	..	..	..	1	..	2	1	..	3	..	..	..	..	1	..	3	4	..	..	2	..	..	1	..	..	36	13
..	..	..	..	..	..	..	..	..	..	1	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	14
3	2	6	6	..	5	..	..	..	2	..	6	8	7	1	8	4	2	6	..	..	1	3	20	4	1	2	6	2	19	1	2	216	15
..	..	7	1	..	1	..	..	..	..	2	..	..	..	..	4	..	..	..	1	..	..	1	6	1	..	..	..	..	8	1	..	67	16
3	1	3	1	..	2	2	..	..	..	..	3	1	1	1	3	1	3	1	..	..	..	1	5	..	..	..	1	..	1	1	2	76	17
1	1	14	3	3	4	1	2	..	..	..	2	6	3	2	4	..	1	5	..	..	..	..	5	..	1	3	3	..	12	2	..	173	18
2	1	6	..	1	4	..	..	..	..	..	3	4	..	..	8	..	..	3	..	2	..	..	9	..	..	2	1	2	3	1	2	97	19
..	..	6	6	..	3	..	1	..	1	1	1	3	..	..	4	..	1	3	..	..	2	..	7	1	..	..	2	..	3	..	..	92	20
1	1	2	..	..	34	..	1	..	..	..	1	..	..	..	2	3	..	3	..	1	..	..	5	1	..	..	..	..	..	..	..	85	21
1	2	3	3	3	4	..	1	1	..	1	..	6	4	1	14	1	1	2	..	2	1	1	8	1	..	2	1	3	1	1	1	120	22
2	..	2	..	4	2	2	..	..	..	3	1	2	3	..	4	1	..	..	..	1	..	..	14	1	..	..	1	2	1	..	..	56	23
1	1	2	4	12	2	..	..	..	..	2	..	7	6	..	1	3	..	4	..	3	..	1	34	..	..	1	3	..	..	..	2	135	24
6	14	6	2	1	1	..	1	..	..	3	..	13	8	..	8	1	1	5	..	2	..	..	7	..	1	7	1	1	..	..	1	128	25
3	2	1	..	1	1	..	..	..	..	1	2	8	3	..	3	..	1	6	1	1	..	..	6	1	..	7	..	4	..	..	1	80	26
2	18	2	1	..	1	..	..	..	2	2	..	11	..	..	2	1	1	3	1	..	..	2	..	..	1	1	..	..	1	..	..	81	27
5	30	4	14	..	1	1	1	..	4	4	4	43	1	..	17	..	..	7	1	..	..	2	7	2	3	2	7	..	1	..	1	268	28
2	53	4	..	..	1	..	1	..	9	1	..	12	1	..	3	..	2	9	6	..	..	..	2	..	2	2	3	..	..	..	..	156	29
2	1	3	5	1	1	2	..	1	..	5	..	15	1	..	15	..	4	7	..	..	2	1	6	1	..	1	2	..	4	2	1	135	30
..	..	..	..	2	..	..	..	..	..	2	..	8	1	..	3	..	..	1	..	..	..	..	6	..	..	..	..	1	1	1	..	45	31
..	2	7	3	..	..	2	1	..	..	2	1	6	2	2	4	..	5	5	..	..	1	2	10	1	..	1	4	1	17	1	..	132	32
1	1	10	1	..	1	1	..	..	..	1	1	1	..	..	16	6	..	3	2	..	..	..	11	..	..	1	7	1	..	2	1	106	33
3	1	6	6	1	1	2	1	..	..	2	..	6	..	..	6	2	1	1	..	..	..	1	14	3	..	3	8	1	4	..	..	115	34
2	1	1	3	..	2	1	9	1	..	1	..	3	..	..	..	..	2	..	..	..	2	..	4	..	..	..	7	1	1	2	..	70	35
..	..	8	8	..	4	3	..	..	..	2	..	1	2	..	3	2	3	1	..	..	2	..	5	..	..	1	9	3	2	3	..	113	36
1	2	3	2	..	1	..	..	2	1	1	..	25	..	..	..	..	1	1	..	1	..	..	3	..	2	1	..	..	..	..	..	66	37
2	6	3	5	1	..	..	1	..	..	9	..	48	1	..	6	..	..	1	..	..	..	..	4	2	1	..	..	1	1	..	1	127	38
4	2	6	3	2	..	..	..	..	..	..	..	45	2	..	5	..	1	4	..	..	..	..	3	..	..	1	1	..	2	..	..	105	39
1	13	6	4	..	2	..	..	..	3	14	1	76	2	..	5	1	..	6	..	..	2	2	7	..	4	4	3	2	..	..	2	220	40
1	5	3	1	..	..	1	..	..	1	6	1	29	1	..	5	..	..	6	1	1	..	..	5	1	2	1	2	..	1	..	2	111	41
..	4	1	3	..	..	..	..	1	..	10	1	68	3	..	4	..	..	9	..	..	..	..	4	1	..	2	..	..	..	..	1	153	42
4	7	4	..	1	..	..	1	..	1	22	1	93	..	..	4	1	..	5	..	..	..	2	9	..	..	2	1	..	1	..	..	214	43
..	4	1	2	1	2	..	..	..	1	1	..	28	2	..	3	..	2	4	..	..	..	1	1	3	2	..	3	1	..	2	..	81	44
1	4	2	4	..	..	..	..	..	..	2	..	25	..	..	2	1	..	5	..	..	..	..	2	..	1	..	..	..	2	..	2	66	45
1	5	5	6	1	1	..	1	..	1	2	..	5	16	..	4	1	..	3	..	2	..	3	7	..	1	5	..	..	..	..	..	99	46
..	..	3	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	1	5	3	..	..	1	..	..	..	..	..	29	47
2	3	7	..	..	3	..	..	..	..	1	1	3	2	..	1	..	1	4	..	..	..	..	2	1	..	2	..	..	1	..	..	79	48
..	2	3	1	..	..	1	..	..	..	1	..	3	5	..	2	..	..	3	..	1	..	1	2	1	..	1	1	1	3	..	1	64	49
..	1	5	1	1	..	1	..	..	..	..	2	2	1	..	..	..	..	2	..	..	..	1	6	..	..	..	2	2	..	1	..	62	50
..	1	3	4	..	2	..	..	..	1	..	2	1	1	..	1	2	..	..	..	..	1	..	12	2	..	1	1	..	1	1	1	62	51
..	..	1	2	..	..	1	..	..	..	..	..	..	..	..	1	..	5	2	..	..	..	..	2	1	..	..	12	..	1	..	1	52	52
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	

TABLE 11.—CANDIDATES LICENSED BY

Marginal Number	SCHOOL	Alabama 1	Arizona 2	Arkansas 3	California 4	Colorado 5	Connecticut 6	Delaware 7	Dist. of Columbia 8	Florida 9	Georgia 10	Idaho 11	Illinois 12	Indiana 13	Iowa 14	Kansas 15	Kentucky 16	Louisiana 17	Maine 18
	PENNSYLVANIA																		
53	Hahnemann Medical College and Hospital of Philadelphia	1	..	..	17	..	3	1	1	..	..	1	..	2	..	..	..	..	1
54	Jefferson Medical College of	1	3	1	10	1	..	..	6	..	..	..	5	2	1	2	2	1	1
55	Temple University School of	2	1	..	11	..	1	1	7	..	2	..	2	3	1	..	1	2	..
56	University of Pennsylvania S	3	..	..	17	1	3	..	1	..	..	..	9	4	2	1	1	3	..
57	Woman's Medical College of	..	..	..	3	..	1	1	..	..	3	1	..	1	..	1	..	..	1
58	University of Pittsburgh School of Medicine	1	1	..	10	1	..	..	1	..	1	..	4	1	1	1	1	..	1
	SOUTH CAROLINA																		
59	Medical College of the State of South Carolina, Charleston	2	..	..	4	..	..	..	..	..	4	..	..	1	1	..	2	..	..
	TENNESSEE																		
60	University of Tennessee College of Medicine, Memphis	9	..	6	5	1	..	..	4	..	3	1	3	1	1	..	15	7	..
61	Meharry Medical College, Nashville	4	..	..	9	..	..	..	3	..	1	..	2	2	..	..	1	1	..
62	Vanderbilt University School of Medicine, Nashville	8	..	1	6	..	3	..	..	..	3	..	2	2	3	..	2	1	..
	TEXAS																		
63	Southwestern Medical School of the University of Texas, Dallas	..	..	..	4	..	..	..	1	..	..	1	..	1	..	..	..	2	..
64	University of Texas School of Medicine, Galveston	..	..	2	7	..	1	..	..	..	..	2	..	1	1	1	..	3	..
65	*Baylor University College of Medicine, Houston*	..	..	..	2	..	..	..	1	..	..	1	2	..	1	..	..	1	..
	UTAH																		
66	University of Utah School of Medicine, Salt Lake City	..	..	..	11	..	..	..	..	..	..	3	..	..	1	1	..	1	..
	VERMONT																		
67	University of Vermont College of Medicine, Burlington	..	..	..	10	..	8	..	1	..	2	..	1	..	1	..	..	..	4
	VIRGINIA																		
68	University of Virginia *Department of Medicine*, Charlottesville	1	1	1	2	..	2	..	6	..	3	..	1	..	1	2	5	4	1
69	Medical College of Virginia, Richmond	1	..	2	5	..	1	..	6	..	3	..	..	2	..	1	..	2	1
	WASHINGTON																		
70	University of Washington *School of Medicine*, Seattle	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	WISCONSIN																		
71	University of Wisconsin Medical School, Madison	..	1	..	9	..	..	1	..	..	..	2	5	2	1	4	1	1	..
72	*Marquette* University School of Medicine, Milwaukee	..	1	1	11	1	..	..	..	..	..	..	5	3	3	..	..	1	..
	CANADA																		
73	University of *Alberta* Faculty of Medicine	..	..	..	3	..	..	..	..	..	..	..	1	..	..	..	..	..	..
74	University of Manitoba Facult	..	..	..	4	..	..	..	..	..	..	1	..	..	..	..	..	..	..
75	*Dalhousie University Faculty o*	1	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..
76	Queen's University Faculty of	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..
77	University of Western Ontario	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
78	University of Toronto Faculty	..	..	..	5	..	1	..	..	..	..	..	1	..	..	..	1	..	..
79	*McGill University Faculty of Medicine, Montreal*	..	..	1	9	..	3	1	..	..	..	..	..	..	2	2	1	1	1
80	University of Montreal Faculty of Medicine, Montreal	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
81	Laval University Faculty of Medicine, Quebec	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	OTHERS																		
82	Foreign Medical Faculties	..	..	..	1	..	10	..	7	..	1	..	..	..	4	..	..	..	1
83	Extinct Medical School	3	..	1	20	2	2	..	..	..	2	2	2	5	3	1	..	1	..
84	Unapproved Medical Schools	..	..	..	5	..	..	..	1	..	..	..	..	..	..	..	..	..	1
85	*Schools of Osteopathy*	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
86	TOTALS	92	50	42	837	79	216	7	154	0	78	54	251	134	124	63	73	81	55
	Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

table 13. The Middle Atlantic and East North Central group of states added the greatest number, 1,186 and 1,123, respectively. More than 600 were added in four other groups—West North Central, 682, South Atlantic, 811, West South Central, 655 and the Pacific states, 634. The New England states added 333, the East South Central, 397, the Mountain States 131 and the territories and outlying possessions, 50.

In the sixteen years from 1935 to 1950, inclusive, there were 99,076 physicians added to the medical profession in the United States. Figures for each year during this period are presented in table 14. Of the 99,076 additions, 85,541 were licensed after a successful written examination and 13,535 by reciprocity or endorsement of credentials. In the same period 168,144 licenses were issued, 98,840 by examination and 69,304 by endorsement of credentials. These figures indicate that 69,068 licenses were obtained by physicians who had previously been licensed to practice medicine and 99,076 were actual additions to the medical profession.

Estimated figures indicate that on December 15, 1950 the total number of physicians in continental United States was 209,040, of whom 150,220 were estimated as in private practice. The figure includes 58,820 licensed physicians engaged in full time research, teaching and administration. It also includes physicians who have retired, interns and residents in hospitals, and those in the government services.

Preprofessional Requirement of Licensing Boards

The minimum requirement of the Council on Medical Education and Hospitals and the Association of American Medical Colleges for admission to approved medical schools since 1918 has been two years of college training. In 1938 both these agencies recommended that at least three years of college work be required of all candidates for admission. With the exception of California, the state licensing boards (table 15) require that an applicant for licensure present evidence of having completed two years of college. Seventy-six of the 79 medical and basic science schools in the United States require three or more years of premedical work. Six of the Canadian medical schools have a similar requirement.

Professional Educational Requirements of Licensing Boards

The medical practice acts or board rulings of several state medical boards state in terms of hours, weeks or months the length of the medical school academic year,

19 Maryland	20 Massachusetts	21 Michigan	22 Minnesota	23 Mississippi	24 Missouri	25 Montana	26 Nebraska	27 Nevada	28 New Hampshire	29 New Jersey	30 New Mexico	31 New York	32 North Carolina	33 North Dakota	34 Ohio	35 Oklahoma	36 Oregon	37 Pennsylvania	38 Rhode Island	39 South Carolina	40 South Dakota	41 Tennessee	42 Texas	43 Utah	44 Vermont	45 Virginia	46 Washington	47 West Virginia	48 Wisconsin	49 Wyoming	50 Alaska, Hawaii, Puerto Rico and Virgin Islands	51 Totals	Marginal Number
1	1	2	..	..	..	..	..	..	..	16	1	16	..	..	3	..	..	21	..	..	..	..	3	2	..	2	..	1	1	..	1	98	53
4	3	5	2	1	2	3	..	..	1	17	2	15	4	..	6	1	1	19	..	1	..	..	6	1	..	3	..	3	1	..	2	139	54
1	1	4	3	..	..	..	..	1	2	6	1	14	3	..	5	1	..	16	..	3	2	1	2	..	..	4	1	4	1	..	4	114	55
9	7	9	2	..	3	..	2	..	..	10	2	18	2	1	4	1	1	27	..	1	..	4	8	4	..	3	3	4	2	..	..	177	56
4	2	2	..	..	2	..	..	..	..	4	..	5	..	..	2	..	..	3	..	..	..	..	..	..	..	..	..	..	1	..	..	38	57
..	2	5	1	..	..	..	..	..	..	2	1	5	..	..	4	..	..	3	..	..	..	..	2	..	..	1	..	3	1	..	..	54	58
1	..	..	1	2	1	..	1	..	..	..	..	..	5	..	2	3	..	3	..	..	..	4	2	..	..	1	..	..	1	..	..	41	59
..	..	2	1	9	9	..	..	1	1	1	1	6	7	..	..	5	..	1	..	4	..	6	20	..	..	6	2	2	1	..	1	142	60
1	..	4	..	..	3	..	..	..	..	4	..	6	1	..	7	..	..	5	..	..	..	..	4	..	..	2	..	..	..	..	1	61	61
..	2	3	1	3	2	..	..	..	..	2	..	3	1	..	2	1	1	..	..	2	..	1	2	..	..	3	1	1	..	..	..	62	62
..	1	1	2	..	..	..	..	..	..	..	1	..	..	..	1	2	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	19	63
..	..	4	2	..	4	..	..	..	..	..	..	2	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	33	64
..	..	5	..	..	1	..	..	1	..	1	4	1	..	..	..	2	..	..	..	..	..	1	2	2	..	..	..	..	..	..	..	28	65
1	..	3	1	..	..	..	..	1	..	..	..	2	1	..	..	..	..	1	..	..	1	..	1	5	..	..	..	..	..	..	..	34	66
..	4	..	..	..	..	..	..	..	4	2	..	17	..	..	1	..	..	3	..	..	..	..	2	..	5	1	..	1	1	..	1	69	67
5	1	6	..	..	..	..	..	1	..	1	1	7	4	..	2	2	..	2	..	2	..	4	2	2	..	5	1	8	1	..	..	87	68
4	1	..	1	1	..	1	..	..	..	4	1	8	8	..	8	..	1	1	..	2	..	7	3	..	..	5	..	8	1	..	..	89	69
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	70
..	3	3	3	..	6	..	..	1	1	1	..	1	1	..	2	1	3	1	..	..	1	2	6	..	..	..	1	1	3	1	..	69	71
..	..	7	1	..	..	1	..	..	..	2	1	6	..	..	1	2	2	1	..	..	1	..	3	1	..	..	1	..	8	1	..	65	72
..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	73
..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	12	74
..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	75
..	..	..	1	..	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	76
..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	5	77
1	..	..	..	3	1	1	..	1	..	1	..	7	..	..	2	..	1	..	..	..	..	..	2	..	..	1	..	..	..	..	..	29	78
1	3	3	1	2	2	1	..	1	1	1	2	5	2	..	1	1	..	..	..	..	1	..	1	..	..	..	2	..	3	..	..	55	79
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	80
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	81
1	..	1	..	1	1	..	3	..	1	17	5	35	1	..	30	1	..	..	..	..	1	..	3	..	..	1	..	..	1	..	7	134	82
1	..	..	1	..	4	1	..	1	2	1	4	1	3	..	..	1	..	..	..	..	..	1	12	..	..	2	1	..	3	..	..	83	83
..	..	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	13	84
..	3	..	..	..	..	..	..	..	1	2	..	3	..	..	8	..	..	..	..	..	1	..	5	..	..	..	..	..	..	1	..	25	85
133	265	264	147	69	148	35	33	19	47	232	70	871	133	9	297	63	57	262	19	45	25	81	421	48	30	128	125	67	132	27	58	6,755	
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	

as well as the total time in hours, weeks or months which must be spent in medical school. In other states the law or ruling reads that the professional educational requirement accepted for approval by the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges is the regulation for licensure. Table 16 outlines the requirements of each state in this respect.

Nine states maintain their own list of approved medical schools in the United States and Canada. Six of these states accept the list of medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association and/or the Association of American Medical Colleges. Twenty-six boards require applicants for licensure from medical schools in the United States to be graduates of medical schools approved by the Council. Three boards require membership in the Association of American Medical Colleges and eighteen boards require that schools be approved by the Council and in membership in the College Association. In the majority of instances this requirement is a formal regulation or is specified in the medical practice act. In only seven instances is it an informal policy.

Only one state, California, specifies in detail the number of hours which must be devoted to the subjects of the medical curriculum.

Required Internships

Six medical schools in the United States and three schools in Canada require their students to serve an internship. These schools are listed in table 17. Northwestern University Medical School discontinued this requirement in December 1950. All except one of these schools withhold the degree of Doctor of Medicine until the year of internship has been served. Duke issues the degree at the end of the four year medical course but obtains from each student a written agreement that he will spend two years in training in a hospital or laboratory. Several of the other schools requiring an internship will permit a student to substitute a year of laboratory work.

The licensing of 24 states, the District of Columbia, Alaska, Guam, Hawaii, Puerto Rico and the Virgin Islands require a year of internship for licensure. During the year Colorado, Kansas and Guam instituted the intern year requirement while it was discontinued by Montana and the Canal Zone. The licensing boards that require the internship are listed in table 18. This table also indicates those states that require a rotating internship. Idaho no longer specifies that the internship must be a straight service. In addition, some states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.

The hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association are generally acceptable in those states requiring an internship for licensure. The current list of approved internships was published in the April 15, 1950 issue of THE JOURNAL. Additions to the list were published in the September 9, 1950 issue of THE JOURNAL.

TABLE 12.—*Licentiates Representing Additions to the Medical Profession, 1950*

	Examination	Reciprocity and Endorsement	Total
Alabama	36	5	41
Arizona	5	1	6
	72	3	75
	458	93	551
	70	7	77
	18	75	93
	11	0	11
	18	42	60
Florida	63	0	63
Georgia	144	5	149
Idaho	2	4	6
Illinois	302	50	352
Indiana	112	15	127
Iowa	57	18	75
Kansas	89	7	96
Kentucky	88	32	120
Louisiana	176	0	176
Maine	9	13	22
	185	20	205
	27	135	162
	150	34	184
	150	36	186
	61	6	67
	198	9	207
Montana	5	0	5
Nebraska	94	2	96
Nevada	0	1	1
New Hampshire	5	14	19
New Jersey	39	51	90
New Mexico	1	3	4
New York	253	448	701
North Carolina	91	14	105
North Dakota	13	0	13
Ohio	309	39	348
Oklahoma	56	6	62
Oregon	34	4	38
Pennsylvania	294	101	395
Rhode Island	5	10	15
South Carolina	57	2	59
South Dakota	8	1	9
Tennessee	165	4	169
Texas	326	16	342
Utah	23	5	28
Vermont	11	11	22
Virginia	134	13	147
Washington	37	8	45
West Virginia	9	3	12
Wisconsin	104	8	112
Wyoming	2	2	4
Alaska, Guam, Hawaii, Puerto Rico and Virgin Islands	33	17	50
Total	4,609	1,393	6,002

Licensure Requirements for Interns and Residents

In the majority of states, physicians serving internships are not required to be licensed in the state in which the hospital where they are interning is located. Georgia, Nevada and Puerto Rico exact this requirement while Colorado, Delaware and Massachusetts require an intern to register with the licensing board.

The legal requirements for physicians engaged in residency training varies. Some states do not enforce a licensure regulation. A number of states, however, consider that residents are practicing medicine and require that such persons possess a license in the state. In some instances a resident must register with the licensing board and other state boards permit a physician to engage in a residency for a specified period before licensure.

TABLE 13.—*Licentiates Representing Additions to the Medical Profession Grouped in Geographic Divisions, 1950.*

	Examination	Reciprocity and Endorsement	Total
New England			
Maine	9	13	22
	5	14	19
	11	11	22
	27	135	162
	5	10	15
	18	75	93
	75	258	333
Middle Atlantic			
New York	253	448	701
New Jersey	39	51	90
Pennsylvania	294	101	395
	586	600	1,186
East North Central			
Ohio	309	39	348
Indiana	112	15	127
Illinois	302	50	352
Michigan	150	34	184
Wisconsin	104	8	112
	977	146	1,123
West North Central			
Minnesota	150	36	186
Iowa	57	18	75
Missouri	198	9	207
North Dakota	13	0	13
	8	1	9
	94	2	96
Kansas	89	7	96
	609	73	682
South Atlantic			
Delaware	11	0	11
Maryland	185	20	205
District of Columbia	18	42	60
Virginia	134	13	147
West Virginia	9	3	12
North Carolina	91	14	105
South Carolina	57	2	59
Georgia	144	5	149
Florida	63	0	63
	712	99	811
East South Central			
Kentucky	88	32	120
Tennessee	165	4	169
Alabama	36	5	41
Mississippi	61	6	67
	350	47	397
West South Central			
Arkansas	72	3	75
Louisiana	176	0	176
Oklahoma	56	6	62
Texas	326	16	342
	630	25	655
Mountain			
Montana	5	0	5
Idaho	2	4	6
Wyoming	2	2	4
Colorado	70	7	77
New Mexico	1	3	4
Arizona	5	1	6
Utah	23	5	28
Nevada	0	1	1
	108	23	131
Pacific			
Washington	37	8	45
Oregon	34	4	38
California	458	93	551
	529	105	634
Territories and Possessions			
Alaska, Hawaii and Puerto Rico	33	17	50
Totals	4,609	1,393	6,002

The requirements of each licensing board for those engaged in intern or residency training are given in table 19.

Schedule of Written Examination Dates and Reciprocity Meetings

The schedule of state licensing boards for written examinations for medical licensure and meetings for the issuance of licenses by reciprocity and/or endorsement of credentials are tabulated in table 20. Examination dates and reciprocity meetings have in recent years been scheduled by many states at more frequent intervals to assist physicians to commence the practice of medicine without delay. This is particularly true with regard to the issuance of licenses without examination. The increase in the number of applicants for licensure since 1945 has added greatly to the duties and responsibilities of the officers of licensing boards. In some states temporary permits are granted enabling physicians to begin the practice of medicine immediately.

Medical License Fees

Table 21 lists for each state, territory and outlying possession the fee charged by the medical licensing board for registration by examination and also by reciprocity or endorsement of credentials. The examination fee tends to be uniform, the majority of the boards charging a fee of $25. The fee for a license without examination varies from $20 to $200.

Licensure on Government Credentials

In most of the states no provision is made in the medical practice act for the acceptance of government credentials as a basis for licensure, without examination. Nine licensing boards, however, will issue a license to a physician who has passed an examination for admission to the medical corps of the United States Army and Navy, the Public Health Service and the Veterans Administration. These states are California, Illinois, New York, Pennsylvania, Rhode Island, Texas, Utah, Virginia and Wisconsin.

Temporary Permits

The licensing boards of twenty states and Alaska, Puerto Rico and Virgin Islands provide for the issuance of temporary permits. These states, the length of validity of the permit and the number of permits granted during the last calendar year are shown in table 22. Florida, North Carolina and North Dakota were added to this group of states in 1950. Maine issues permits to summer camp physicians, Indiana, Nebraska and Virginia to reciprocity applicants until licensure is perfected, North Carolina to physicians serving residencies, North Dakota to displaced foreign physicians for practice in specified areas until citizenship is completed while Puerto Rico and Virgin Islands grant this privilege to physicians in government positions only. There were 677 permits issued by 19 boards. Four boards did not report the issuance of any permits in 1950.

Annual Registration

Thirty-two states, the District of Columbia, and Alaska require physicians to register their licenses annually or biennially. In table 23 are listed the licensing boards which have such a requirement and the fee charged. Some of these boards require such registration whether or not physicians reside in the state. Delaware and Florida initiated this requirement in 1950. The fee ranges from $1 to $10. Five states have a nonresident fee. Missouri, New York and West Virginia require biennial registration. Legislation was approved in Vermont in 1951.

Candidates Examined for Medical Licensure, 1946-1950

The numbers of candidates examined in the various states, territories and outlying possessions in five years, 1946 to 1950 inclusive, are recorded in table 24. For each year there is recorded the number who passed and failed licensing examinations. Totals for the five year period and the percentage of candidates who failed are also given.

Table 14.—*Licentiates Representing Additions to the Medical Profession, 1935-1950*

	Examination	Reciprocity and Endorsement	Total
1935	5,099	411	5,510
1936	5,546	629	6,177
1937	5,812	612	6,424
1938	5,759	501	6,260
1939	5,584	460	6,044
1940	5,432	455	5,887
1941	5,241	474	5,715
1942	5,560	454	6,014
1943	5,586	372	5,958
1944	6,495	470	6,965
1945	4,979	769	5,748
1946	5,362	1,608	6,970
1947	5,273	1,617	6,890
1948	4,942	1,694	6,636
1949	4,260	1,616	5,876
1950	4,609	1,393	6,002
Totals	85,541	13,535	99,076

Table 15.—*Requirements of Premedical Training by Medical Licensing Boards*

Two Years or More of College

Alabama
Arizona
Arkansas
Colorado
Connecticut
Delaware
District of Columbia
Florida
Georgia
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming
Alaska
Canal Zone
Guam
Hawaii
Puerto Rico
Virgin Islands

One Year of College
California

In the five year period shown 33,564 examinations were given. Of these, 29,874 were successful tests and 3,690, or 10.6 per cent, resulted in failures. New York gave the greatest number of examinations, 4,197. More than 2,000 examinations were also given in California and Pennsylvania and more than 1,000 were given in Florida, Michigan, Missouri, Ohio and Texas.

Massachusetts had the highest percentage of failures. By statute, the licensing board is required to admit to its examinations the graduates of medical schools which do not meet accepted standards and graduates of schools of osteopathy, many of whom repeatedly fail. The Approving Authority of Massachusetts had
students matriculating y 1, 1941 in
tions not meeting the authority w
be eligible for licens this regulati
evident in the annual mber of f

a time, followed by a decline in the years 1940 to 1943 inclusive. There was a noticeable increase in 1943 as the result of the accelerated medical school curriculum and the universal effort on the part of medical educators of the country to maintain a steady flow of physicians for both civilian and military practice. In 1943 more physicians were registered than in any previous year.

The number registered in 1946 was almost double the number registered in 1945. Separation from service of a large number of medical officers and their return to private practice in states other than those in which they were licensed accounts in large part for this increase. In the years since 1945 the numbers registered has annually decreased although they far exceed the prewar totals.

In the present national emergency efforts are being made to further increase the production of physicians. There has been created a Joint Committee on Medical Education in Time of National Emergency representing the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges. This committee has recommended that medical schools should exert effort to admit as many medical students as they can train without deterioration of the quality of medical training they can provide. The committee has further recommended that provision should be made for the increased financial support essential to the provision and maintenance of the increase in faculty, facilities and buildings required to accomplish the proposed increase in enrolments. The freshman class enrolled in medical schools for the session 1950-1951 exceeded 7,000 which is in excess of all previous enrolments. There was an increase of 1,433 students, or 6 per cent, in the total enrolment for the class of 1949-1950 and it is anticipated that the figures for 1950-1951 will be the highest in history. Medical schools are also being urged to reorganize their curriculum to give proper emphasis to subjects of particular importance for the national health, security and welfare in time of national emergency.

TABLE 17.—*Medical Schools Requiring an Internship*

United States

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Chicago Medical School
University of Minnesota Medical School
Duke University School of Medicine *

CANADA

University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

---

* Degree not withheld until internship completed.

TABLE 18.—*Medical Licensing Boards Requiring a One Year Internship**

Alabama
Arizona
Colorado
Delaware [1]
District of Columbia
Idaho
Illinois [1]
Iowa [1]
Kansas
Michigan [1]
Nevada
New Hampshire
New Jersey [1]
North Dakota [1]
Oklahoma [1]
Oregon [1]
Pennsylvania [1]
Rhode Island [1]
South Dakota
Utah
Vermont [6]
Washington [1]
West Virginia
Wisconsin [1]
Wyoming [1]
Alaska
Guam
Hawaii [1]
Puerto Rico [1]
Virgin Islands

---

* Some states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.

[1] Internship must be a rotating service.

In 1904, the first year shown, the percentage of failures was 19.3. This was an era of proprietary medical schools. The percentage of failures gradually dropped each year until 1930 when 5.7 per cent failed. With the migration of European physicians to this country beginning in 1936 and the resultant licensure difficulties, the percentage of failures began to rise reaching another peak of 20.7 per cent in 1940. Beginning in 1944 there was a decrease in the number of foreign trained physicians and graduates of unapproved medical schools although this has not lowered the percentage of failures.

TABLE 19.—*Licensure Requirements for Interns and Residents in Hospitals*

	Licensure in State Required for	
	Interns	Residents
Alabama	No	No
Arizona	No	No
Arkansas	No	Yes
California	No	Yes [1]
Colorado	No [2]	No [2]
Connecticut	No [3]	No [3]
Delaware	No [4]	No [4]
District of Columbia	No	Yes
Florida	No	Yes
Georgia	Yes	Yes
Idaho	No	Yes
Illinois	No	Yes
Indiana	No [5]	Yes
Iowa	No	Yes
Kansas	No	Yes
Kentucky	No	No
Louisiana	No	Yes
Maine	No	Yes
Maryland	No	No [3]
Massachusetts	No [4]	Yes
Michigan	No	Yes
Minnesota	No	Yes
Mississippi	No	Yes
Missouri	No	No
Montana	No	No
Nebraska	No	No [6]
Nevada	Yes	Yes
New Hampshire	No	No
New Jersey	No [7]	No [7]
New Mexico	No	Yes
New York	No	No
North Carolina	No	Yes
North Dakota	No	Yes
Ohio	No	Yes
Oklahoma	No	Yes [9]
Oregon	No	No
Pennsylvania	No	Yes
Rhode Island	No	No
South Carolina	No	Yes
South Dakota	No	No
Tennessee	No	No
Texas	No	Yes
Utah	No	Yes
Vermont	No	No
Virginia	No [8]	No [8]
Washington	No	Yes
West Virginia	No	No
Wisconsin	No	Yes
Wyoming	No	No
Alaska	No	No
Canal Zone	No	No
Guam	No	No
Hawaii	No	No
Puerto Rico	Yes	Yes
Virgin Islands	No	No

---

[1] May commence residency before licensure.
[2] Interns and residents must register with board and may not continue such service for more than four years without license.
[3] Required by some hospitals.
[4] Registration with licensing board required.
[5] Must be eligible for licensure.
[6] Licensure recommended.
[7] May have service of two years without licensure.
[8] May have service of three years without licensure.
[9] Temporary licensure granted for one year.

This table again refers to examinations given annually rather than individuals examined.

Graduates of Approved Schools and Others Registered, 1922-1950

In table 26 the numbers of physicians registered are grouped in two categories, namely, graduates of a[illegible]ved medical schools and others. In the compu[illegible] figures, schools rated as Class A and B

New York had a percentage failure in the five year period of 48.4 and California's percentage of failures was 25.8. These states examine a considerable number of foreign trained physicians, many of whom are not successful in the first examination. Regulations admitting certain graduates of unapproved and osteopathic schools to the licensure examination in New York also resulted in a high percentage of failures in recent years.

TABLE 16.—*Professional Educational Requirements by Medical Licensing Boards*

	Length of Medical School Academic Year						Total Time Spent in Medical School (Registration to Graduation)						
	Hours	Weeks	Months	Same as Approved Medical Schools	Same as A.A.M.C. and C.M.E. and H.*	Not Specified by Board	Hours	Weeks	Months	Years	M.D. Degree	Same as Approved Medical Schools	Same as A.A.M.C. and C.M.E. and H.*
Alabama	..	..	9	..	..	..	..	..	..	4	..	..	..
Arizona	..	..	..	..	X	..	..	..	..	..	..	..	X
Arkansas	..	..	9	..	..	..	..	..	..	4	..	..	..
California	..	32	..	..	..	..	4,000	..	..	4	..	..	..
Colorado	..	..	..	..	..	X	..	..	..	..	X	..	..
Connecticut	..	32	..	..	..	..	..	..	28	..	X	..	..
Delaware	..	..	..	..	..	X	128	..	..	4	..	..	..
District of Columbia	..	..	9	..	..	..	..	..	36	..	..	..	..
Florida	..	..	9	..	..	..	..	..	..	4	..	..	..
Georgia	..	..	9	..	..	..	..	..	..	4	..	..	..
Idaho	..	..	9	..	..	..	..	..	..	4	..	..	..
Illinois	..	..	9	..	..	..	..	..	40	..	..	..	..
Indiana	..	..	8	..	..	..	..	..	42	..	..	..	..
Iowa	..	..	9	..	..	..	..	..	..	4	..	..	..
Kansas	..	..	9	..	..	..	..	..	..	4	..	..	..
Kentucky	..	..	8½	..	..	..	..	..	..	4	..	..	..
Louisiana	..	..	..	..	X	..	..	..	..	..	X	..	X
Maine	..	..	..	..	X	..	..	..	..	..	..	..	X
Maryland	..	..	..	..	X	..	..	..	..	..	..	..	X
Massachusetts	..	32	..	..	..	..	..	..	..	4	..	..	..
Michigan	..	32	..	..	..	..	..	..	36	..	..	..	..
Minnesota	..	36	..	..	..	..	..	..	..	4	..	..	..
Mississippi	..	32	8	..	..	..	..	..	..	4	..	..	..
Missouri	..	32	..	..	..	..	..	..	..	4	..	..	..
Montana	..	..	9	..	..	..	..	..	..	4	..	..	..
Nebraska	..	..	9	..	..	..	..	..	..	4	..	..	..
Nevada	..	..	9	..	..	..	..	..	..	4	..	..	..
New Hampshire	..	..	..	..	..	X	..	..	..	..	X	..	..
New Jersey	..	..	..	..	..	+	..	..	..	4	..	..	..
New Mexico	..	..	..	X	..	..	..	..	..	..	X	X	..
New York	..	..	8	..	..	..	..	..	..	4	..	..	..
North Carolina	..	..	9	..	..	..	..	..	..	4	..	..	..
North Dakota	..	..	9	..	..	..	..	..	..	4	..	..	..
Ohio	..	..	8½	..	..	..	..	..	..	4	..	..	..
Oklahoma	..	..	..	..	..	X	..	..	..	..	X	..	..
Oregon	..	..	8	..	..	..	..	..	32	4	..	..	..
Pennsylvania	..	32	..	..	..	..	..	..	..	4	..	..	..
Rhode Island	..	..	..	..	..	X	..	..	..	..	X	..	..
South Carolina	..	..	9	..	..	..	..	..	..	4	..	..	..
South Dakota	..	..	..	..	..	X	..	..	..	4	..	..	..
Tennessee	..	..	9	..	..	..	..	..	36	..	..	..	..
Texas	..	..	8	..	..	..	..	..	..	4	..	..	..
Utah	..	..	9	..	..	..	..	..	..	4	..	..	..
Vermont	900	..	..	..	..	..	..	..	..	4	..	..	..
Virginia	..	32	8	..	..	..	..	..	..	4	..	..	..
Washington	..	..	..	..	X	..	..	..	..	4	..	..	X
West Virginia	..	..	..	..	..	X	..	..	..	..	X	..	X
Wisconsin	..	..	..	..	..	X	..	..	..	4	..	..	X
Wyoming	..	..	..	..	..	X	..	..	..	4	..	..	..
Alaska	..	..	..	..	X	..	..	..	..	..	..	..	X
Canal Zone	..	..	10	..	..	..	..	..	..	4	X	..	..
Guam	..	..	..	X	..	..	..	..	..	..	..	X	..
Hawaii	..	..	..	..	..	X	..	..	..	..	..	..	X
Puerto Rico	..	..	..	..	X	..	..	..	..	..	..	..	X
Virgin Islands	..	..	..	..	..	X	..	..	..	..	X	..	X

* Association of American Medical Colleges and Council on Medical Education and Hospitals of the American Medical Association.
X implies requirements are those of the accrediting agencies.

Nevada, New Hampshire and New Jersey had a failure percentage in five years of more than 10 per cent. Twenty-five states failed less than 5 per cent of those examined in the five year period. Eight states had no failures.

The annual percentage of failures for all boards in the five year period varied from 9.9 per cent to 12.5 per cent. The highest percentage was in 1949.

The foregoing figures represent examinations given and not individuals. A candidate who fails more than once in a state in a given year is counted only once, but should he again fail in a succeeding year this fact is computed among the failures for that year. In compiling the tabulations in this study, a successful candidate securing a license in more than one state in a given year is counted in both states and likewise counted if he passed at examinations in later years. The totals in this table give only a fair approximation of the number of physicians added to the profession after written examination during the last five years. Table 12 gives the exact compilation of the number of physicians who constitute new additions to the medical profession.

Registration of Physicians, 1904-1950

A tabulation of totals and percentages for 47 years from 1904 to 1950, inclusive, is included in table 25. This study contains figures pertaining to the number of physicians examined and registered by written examination, the annual percentage of failures, the number registered annually by reciprocity or endorsement of credentials and the total registered. Reviewing the totals registered reveals no definite trend from 1904 to 1933 except in 1918 when 4,231 were licensed, the lowest registration in 47 years. This decrease was due to a sudden withdrawal of physicians from civilian life in World War I. After 1933 there was an upward trend for a time, followed by a decline in the years 1940 to 1943 inclusive. There was a noticeable increase in 1943 as the result of the accelerated medical school curriculum and the universal effort on the part of medical educators of the country to maintain a steady flow of physicians for both civilian and military practice. In 1943 more physicians were registered than in any previous year.

The number registered in 1946 was almost double the number registered in 1945. Separation from service of a large number of medical officers and their return to private practice in states other than those in which they were licensed accounts in large part for this increase. In the years since 1945 the numbers registered has annually decreased although they far exceed the prewar totals.

In the present national emergency efforts are being made to further increase the production of physicians. There has been created a Joint Committee on Medical Education in Time of National Emergency representing the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges. This committee has recommended that medical schools should exert effort to admit as many medical students as they can train without deterioration of the quality of medical training they can provide. The committee has further recommended that provision should be made for the increased financial support essential to the provision and maintenance of the increase in faculty, facilities and buildings required to accomplish the proposed increase in enrolments. The freshman class enrolled in medical schools for the session 1950-1951 exceeded 7,000 which is in excess of all previous enrolments. There was an increase of 1,433 students, or 6 per cent, in the total enrolment for the class of 1949-1950 and it is anticipated that the figures for 1950-1951 will be the highest in history. Medical schools are also being urged to reorganize their curriculum to give proper emphasis to subjects of particular importance for the national health, security and welfare in time of national emergency.

TABLE 17.—*Medical Schools Requiring an Internship*

United States

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Chicago Medical School
University of Minnesota Medical School
Duke University School of Medicine *

CANADA

University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

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* Degree not withheld until internship completed.

TABLE 18.—*Medical Licensing Boards Requiring a One Year Internship**

Alabama
Arizona
Colorado
Delaware [1]
District of Columbia
Idaho
Illinois [1]
Iowa [1]
Kansas
Michigan [1]
Nevada
New Hampshire
New Jersey [1]
North Dakota [1]
Oklahoma [1]
Oregon [1]
Pennsylvania [1]
Rhode Island [1]
South Dakota
Utah
Vermont [6]
Washington [1]
West Virginia
Wisconsin [1]
Wyoming [1]
Alaska
Guam
Hawaii [1]
Puerto Rico [1]
Virgin Islands

---

* Some states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.
1. Internship must be a rotating service.

In 1904, the first year shown, the percentage of failures was 19.3. This was an era of proprietary medical schools. The percentage of failures gradually dropped each year until 1930 when 5.7 per cent failed. With the migration of European physicians to this country beginning in 1936 and the resultant licensure difficulties, the percentage of failures began to rise reaching another peak of 20.7 per cent in 1940. Beginning in 1944 there was a decrease in the number of foreign trained physicians and graduates of unapproved medical schools although this has not lowered the percentage of failures.

TABLE 19.—*Licensure Requirements for Interns and Residents in Hospitals*

	Licensure in State Required for	
	Interns	Residents
Alabama	No	No
Arizona	No	No
Arkansas	No	Yes
California	No	Yes [1]
Colorado	No [2]	No [2]
Connecticut	No [3]	No [3]
Delaware	No [4]	No [4]
District of Columbia	No	Yes
Florida	No	Yes
Georgia	Yes	Yes
Idaho	No	Yes
Illinois	No	Yes
Indiana	No [5]	Yes
Iowa	No	Yes
Kansas	No	Yes
Kentucky	No	No
Louisiana	No	Yes
Maine	No	Yes
Maryland	No	No [3]
Massachusetts	No [4]	Yes
Michigan	No	Yes
Minnesota	No	Yes
Mississippi	No	Yes
Missouri	No	No
Montana	No	No
Nebraska	No	No [6]
Nevada	Yes	Yes
New Hampshire	No	No
New Jersey	No [7]	No [7]
New Mexico	No	Yes
New York	No	No
North Carolina	No	Yes
North Dakota	No	Yes
Ohio	No	Yes
Oklahoma	No	Yes [9]
Oregon	No	No
Pennsylvania	No	Yes
Rhode Island	No	No
South Carolina	No	Yes
South Dakota	No	No
Tennessee	No	No
Texas	No	Yes
Utah	No	Yes
Vermont	No	No
Virginia	No [8]	No [8]
Washington	No	Yes
West Virginia	No	No
Wisconsin	No	Yes
Wyoming	No	No
Alaska	No	No
Canal Zone	No	No
Guam	No	No
Hawaii	No	No
Puerto Rico	Yes	Yes
Virgin Islands	No	No

---

1. May commence residency before licensure.
2. Interns and residents must register with board and may not continue such service for more than four years without license.
3. Required by some hospitals.
4. Registration with licensing board required.
5. Must be eligible for licensure.
6. Licensure recommended.
7. May have service of two years without licensure.
8. May have service of three years without licensure.
9. Temporary licensure granted for one year.

This table again refers to examinations given annually rather than individuals examined.

Graduates of Approved Schools and Others Registered, 1922-1950

In table 26 the numbers of physicians registered are grouped in two categories, namely, graduates of approved medical schools and others. In the computation of these figures, schools rated as Class A and B by the Council on

Medical Education and Hospitals of the American Medical Association since 1907 are classified as approved. In the column headed "Others" are included persons who graduated prior to 1907, when the first classification of medical schools was made by the Council, graduates of foreign faculties of medicine, class C graduates, osteopaths given recognition by medical licensing boards, and graduates of schools not approved by the Council. In 1928 the classification A, B, and C by the Council was discontinued and a list of approved medical schools has since been maintained.

TABLE 20.—*Schedule of Written Examination Dates and Issuance of Licenses by Reciprocity or Endorsement of Credentials*

	Written Examination	Licenses by Reciprocity or Endorsement Issued
Alabama	Once annually	Continuously
Arizona	Quarterly	Quarterly
Arkansas	Semi-annually	Continuously
California	Quarterly	Twelve meetings annually
Colorado	Semi-annually	Quarterly
Connecticut	March, July and Nov.	Continuously
Delaware	Semi-annually	Semi-annually
District of Columbia	Semi-annually	Quarterly
Florida	Semi-annually	None
Georgia	June and October	Three times annually
Idaho	*Semi-annually*	*Semi-annually*
Illinois	Quarterly	Quarterly
Indiana	Annually, June	Six times annually
Iowa	Semi-annually	Continuously
Kansas	Semi-annually	Semi-annually
Kentucky	Semi-annually	Continuously
Louisiana	June, December	June, December
Maine	March, July, Nov.	March, July, November
Maryland	Semi-annually	Every five weeks
Massachusetts	January, July	Every month except Aug.
Michigan	June, October	Continuously
Minnesota	Quarterly	Quarterly
Mississippi	June	June, December
Missouri	Periodically	Periodically
Montana	Semi-annually	Semi-annually
Nebraska	Once annually in June	Continuously
Nevada	Quarterly	Quarterly
New Hampshire	Twice annually	Twice annually
New Jersey	June, October	Monthly *except August*
New Mexico	Semi-annually	Semi-annually
New York	Three times annually	Continuously
North Carolina	June	*Five times annually*
North Dakota	January, July	January, July
Ohio	June, December	Quarterly
Oklahoma	Annually	Quarterly
Oregon	Semi-annually	Quarterly
Pennsylvania	January, July	Monthly
Rhode Island	Quarterly	Quarterly
South Carolina	Semi-annually	Monthly
South Dakota	Semi-annually	Semi-annually
Tennessee	Every three months	Continuously
Texas	June, November	June, November
Utah	Annually, July	Semi-annually
Vermont	Semi-annually	Continuously
Virginia	Semi-annually	Semi-annually
Washington	Semi-annually	Semi-annually
West Virginia	Quarterly	Quarterly
Wisconsin	Semi-annually	Semi-annually
Wyoming	Three times annually	Three times annually
Alaska	March, September	Continuously
Canal Zone	As needed	As needed
Guam	As needed	As needed
Hawaii	January, July	Continuously
Puerto Rico	Semi-annually	Quarterly
Virgin Islands	Twice annually	Twice annually

In 1950 there were 12,236 candidates registered of whom 11,502 or 94 per cent represented graduates of approved schools and 734 (6.0 per cent) were in the second group. In the twenty-nine years recorded in this table, 261,014 were registered, including 234,698 approved graduates, 89.9 per cent and 26,316 others, 10.1 per cent.

Graduates of Unapproved Schools Registered, 1945-1950

Recorded in table 27 are data regarding graduates of institutions which have not been approved by the Council on Medical Education and Hospitals of the American Medical Association. In the main they represent five schools more recently in operation, all but one of which is now closed. The latter institution has obtained the status of an approved institution.

This table shows the number registered as medical licentiates in the United States, Alaska and Hawaii by written examination and by reciprocity and/or endorsement of credentials in the past six years, 1945-1950 inclusive. Figures are given separately for these two groups. In the six years shown, twenty-eight states, the District of Columbia, Alaska and Hawaii registered 1,012 by examination and 40 by endorsement. In 1950 there were 58 registered, 45 by examination and 13 without written examination by seventeen boards, Arkansas, California, District of Columbia, Florida, Georgia, Illinois, Maine, Massachusetts, Michigan, Mississippi, Missouri, New York, North Carolina, *Ohio*, *Pennsylvania*, Texas and Hawaii.

TABLE 21.—*Medical Licensure Fees*

	Examination	Reciprocity or Endorsement
Alabama	$ 10	$ 50
Arizona	25	100
[illegible]	25	50-100
[illegible]	25	100
[illegible]	25	50
[illegible]	25	50[1]
[illegible]	25	100
[illegible]	25	50
Florida	25	..
Georgia	20	50
Idaho	25	100
Illinois	15	25
Indiana	25	50
Iowa	25	50
Kansas	25	50
[illegible]	25	50
[illegible]	25	50[2]
[illegible]	25	50
Maryland	20	50
[illegible]	25	50[1]
[illegible]	25	50
[illegible]	20	75
[illegible]	10	50
Missouri	15	50[3]
Montana	50	75
Nebraska	25	50
Nevada	100	200
New Hampshire	30	20
New Jersey	25	100
New Mexico	50	50
New York	25	25
North Carolina	15	50
North Dakota	25	50
Ohio	25	50
Oklahoma	25	100
Oregon	25	100
Pennsylvania	25	50
Rhode Island	20	20
South Carolina	25	50
South Dakota	20	50
Tennessee	25	50
Texas	25	50
Utah	25	50
Vermont	20	50
Virginia	25	50
Washington	25	25
West Virginia	25	100
Wisconsin	25	50
Wyoming	25	50
Alaska	25	100
Guam	50	50
Hawaii	25	25
Puerto Rico	30	30
Virgin Islands	65	50

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1. Endorsement of certificate of National Board of Medical Examiners $25.
2. Same as charged by the reciprocating state if more *than* $50.
3. Endorsement of certificate of National Board of Medical Examiners $15.

Illinois, which accepted for licensure the graduates of one school not approved by the Council until *late in* 1948, New York and Florida, which have made certain concessions, and Massachusetts licensed the largest number of unapproved medical schools. In the latter state, the institutions referred to in the table were *not granted* approval by the State Approving Authority. Matriculants after January 1, 1941 are not eligible for licensure in Massachusetts.

Graduates of Schools of Osteopathy Registered by Medical Examining Boards, 1945-1950

In seventeen states and the District of Columbia during the last six years (1945-1950) graduates of schools of osteopathy have been granted the privilege of practicing medicine or surgery or both by the medical examining board. The states which have registered such candidates and the number so registered are given in table 28. There have been 1,084 such persons registered, 775 by written examination and 309 by reciprocity or endorsement. In 1950 there were 151 so registered, 126 by examination and 25 by reciprocity by thirteen boards—Colorado, Connecticut, District of Columbia, Indiana, Massachusetts, New Hampshire, New Jersey, New York, Ohio, South Dakota, Texas, Virginia and Wyoming.

Following is a summary of the situation in the seventeen states and the District of Columbia providing for the licensing of osteopaths by the medical examining board.

In 1947, Alabama registered a graduate of a school of mechanotherapy.

Table 22.—*Temporary Permits, 1950*

State	Permit Valid for:	Permits Granted
Arizona	Next board meeting	42
Delaware	Four months	4
Florida	One year	1
Georgia	Next board meeting	0
Idaho	Six months	14
Indiana [1]	Six months	134
Kansas	Next board meeting	45
Kentucky	1-5 years (limited license)	1
Louisiana	Next board meeting	92
Maine	Ten weeks for summer camp physicians	0
Mississippi	Next board meeting	69
Nebraska [1]	Until licensure is perfected	3
New Hampshire	Varies	0
New Jersey	Four months	9
New Mexico	Six months	63
North Carolina	Limited license for residents	53
North Dakota	For displaced physicians in specified areas until citizenship is completed	4
Oklahoma	One year for hospital residents	8
Virginia [1]	Next board meeting	61
West Virginia	Next board meeting	52
Alaska	Six months	19
Puerto Rico [2]	Until July 1951	0
Virgin Islands [2]	Six months	3
Total		677

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[1] Reciprocity applicants.
[2] Government positions only.

In Colorado an osteopath receives a license to practice medicine. In Connecticut any registered osteopath may practice either medicine or surgery or both, according to the type of examination taken, if he passes a satisfactory examination before the medical examining board. In Delaware osteopaths are licensed as "osteopathic physicians." In the District of Columbia osteopaths are granted the right to practice surgery. In Indiana the licenses issued to osteopaths under a 1945 amendment to the medical practice act authorize the holders to practice medicine and surgery. Licentiates in osteopathy prior to 1945 have now been authorized to practice osteopathy, surgery and obstetrics. In Massachusetts the medical practice act by definition includes osteopathy in the practice of medicine and does not differentiate the type of license issued to an osteopathic applicant. According to a law passed in Nebraska in 1943, "any person now licensed to practice osteopathy may, if application was made prior to July 1, 1948 and on payment of the prescribed fee, take the first regular examination given after the application is made before the Board of Examiners in Medicine. . . . If successful, he or she shall receive a license to practice medicine and surgery in the state." In New Hampshire osteopaths are granted the right to practice medicine and surgery.

Table 23.—*States Requiring Annual Registration*

	Fee		Fee		Fee
Arizona	$ 5	Kansas	$ 1	Pennsylvania	$ 1
Arkansas	a	Louisiana	2	Tennessee	5
California	2	Minnesota	2	Texas	2
Colorado	b	Missouri *	1	Utah	3
Connecticut	2	Montana	5	Virginia	1
Delaware	10	Nebraska	1	Vermont [f]	..
Dist. of Columbia	2	Nevada	2	Washington	5
Florida	1	New Mexico	d	West Virginia *	2
Georgia	None	New York *	4	Wisconsin	3
Idaho	10	North Dakota	e	Wyoming	2.50
Indiana	c	Oklahoma	3	Alaska	10
Iowa	1	Oregon	10	Hawaii	2

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[a] Residents $2, Nonresidents $4.
[b] Residents $2, Nonresidents $10.
[c] Residents $5, Nonresidents $10.
[d] Residents $2, Nonresidents $5.
[e] Residents $5, Nonresidents $2.
[f] Legislation approved April 11, 1951.
* Biennial registration.

Table 24.— *Candidates Examined, 1946-1950*

	1946		1947		1948		1949		1950		Totals for Five Years		
	P	F	P	F	P	F	P	F	P	F	P	F	%F
Alabama	20	0	97	0	16	2	46	1	39	0	218	3	1.4
Arizona	12	1	19	3	17	0	22	0	8	1	78	5	6.0
Arkansas	63	0	54	0	59	0	52	0	74	0	302	0	0.0
California	530	11	503	10	493	36	492	57	543	37	2,561	151	5.6
Colorado	77	0	95	0	72	2	78	0	76	0	398	2	0.5
Connecticut	55	10	49	17	32	7	29	15	29	19	194	68	25.8
Delaware	16	1	20	0	20	0	21	0	23	0	100	1	1.0
Dist. of Columbia	41	0	39	0	33	3	30	1	24	3	167	7	4.0
Florida	373	62	314	17	301	26	308	19	325	46	1,621	170	9.5
Georgia	168	2	129	0	131	1	109	4	147	1	684	8	1.2
Idaho	54	0	62	0	51	0	38	1	1	0	206	1	0.5
Illinois	751	33	605	16	512	44	367	67	399	60	2,634	220	7.8
Indiana	139	16	111	12	99	2	98	4	112	3	559	37	6.2
Iowa	57	4	55	0	67	0	57	0	86	1	322	5	1.5
Kansas	102	0	86	0	67	0	99	1	96	1	450	2	0.4
Kentucky	166	0	90	0	60	0	86	0	88	0	490	0	0.0
Louisiana	189	1	225	1	182	0	164	1	190	1	950	4	0.4
Maine	45	4	31	2	31	3	25	4	19	1	151	14	8.5
Maryland	204	4	175	6	185	8	172	17	183	10	919	45	4.7
Massachusetts	89	163	84	140	65	111	41	92	26	71	305	577	65.4
Michigan	215	0	116	0	181	0	164	0	195	0	871	0	0.0
Minnesota	313	0	248	0	212	1	184	0	201	0	1,158	1	0.1
Mississippi	45	0	59	0	47	0	35	5	64	1	250	6	2.3
Missouri	251	1	265	0	238	0	198	0	206	0	1,158	1	0.1
Montana	17	0	8	0	10	1	8	0	5	0	48	1	2.0
Nebraska	81	5	87	3	84	16	52	4	96	3	400	31	7.2
Nevada	15	3	8	0	3	1	4	1	0	0	30	5	14.3
New Hampshire	20	4	10	0	10	1	7	1	6	1	53	7	11.7
New Jersey	116	5	89	13	90	22	76	9	41	11	412	60	12.7
New Mexico	1	0	1	0	3	0	4	1	2	0	11	1	8.3
New York	427	386	610	482	426	371	411	397	290	397	2,164	2,033	48.4
North Carolina	95	0	113	1	112	0	88	0	97	1	505	2	0.4
North Dakota	13	0	25	0	30	0	24	0	35	3	127	3	2.3
Ohio	340	10	297	3	322	7	262	6	326	19	1,547	45	2.8
Oklahoma	68	0	72	0	59	0	47	1	82	0	328	1	0.3
Oregon	50	3	80	0	48	0	47	4	38	2	263	9	3.3
Pennsylvania	463	3	437	3	448	6	396	3	326	2	2,070	17	0.8
Rhode Island	40	0	32	0	21	0	15	1	12	3	120	4	3.2
South Carolina	53	0	55	0	57	0	43	1	59	0	267	1	0.4
South Dakota	10	0	18	0	27	0	10	0	20	0	85	0	0.0
Tennessee	157	1	148	0	150	0	177	0	142	0	774	1	0.1
Texas	266	14	282	13	262	33	184	10	277	16	1,271	86	6.3
Utah	79	0	0	0	18	0	30	0	29	0	156	0	0.0
Vermont	5	0	27	1	16	0	11	4	15	1	74	6	7.5
Virginia	174	2	130	4	136	4	109	5	138	1	687	16	2.3
Washington	130	0	116	0	110	0	72	0	60	0	488	0	0.0
West Virginia	64	0	40	0	55	0	61	0	42	0	262	0	0.0
Wisconsin	123	1	143	0	182	7	109	0	130	0	687	8	1.1
Wyoming	0	0	0	0	0	0	1	0	2	0	3	0	0.0
U. S. Territories and Possessions	74	4	55	3	54	5	56	7	57	6	296	25	7.8
Total examined	7,610		7,164		6,624		5,963		6,203		33,564		
Passed	6,856		6,414		5,904		5,219		5,481		29,874		
Failed	754		750		720		744		722		3,690		
Percentage failed	9.9		10.5		10.8		12.5		11.6		10.6		

New Jersey provides that osteopaths licensed prior to November 1, 1941 who furnish proof prior to that date of having served for a period of two years as an intern or resident surgeon in an osteopathic or medical hospital approved by the board of medical examiners, of having completed a postgraduate course of two years in a college of osteopathy or medicine approved by the board or of having had at least three years of practice in a hospital approved by the board can be admitted to an examination in pharmacology, therapeutics and surgery and, if successful, can obtain a license to practice medicine and surgery. Since 1941 all osteopathic applicants who have met the requirements of the medical practice act have been licensed to practice medicine and surgery.

TABLE 25.—*Registration of Physicians 1904-1950*

Year	Examined	Passed	Percentage Failed	Reciprocity or Endorsement	Total Registered
1904	7,056	5,693	19.3	1,005	6,698
1905	7,178	5,688	20.8	394	6,082
1906	8,040	6,373	20.7	1,502	7,875
1907	7,279	5,731	21.3	1,427	7,158
1908	7,775	6,089	21.7	1,284	7,373
1909	7,295	5,865	19.6	1,381	7,246
1910	7,011	5,719	18.4	1,640	7,359
1911	6,964	5,582	19.8	1,243	6,825
1912	6,880	5,467	20.5	1,273	6,740
1913	6,453	5,253	18.6	1,292	6,545
1914	5,579	4,379	21.5	1,439	5,818
1915	5,334	4,507	15.5	1,399	5,906
1916	4,878	4,151	14.9	1,353	5,504
1917	4,754	4,085	14.0	1,360	5,445
1918	3,667	3,184	13.2	1,047	4,231
1919	4,750	4,074	14.2	2,546	6,620
1920	4,796	4,062	15.3	2,558	6,620
1921	4,825	4,228	12.4	2,186	6,414
1922	4,031	3,539	12.2	2,073	5,612
1923	4,727	4,028	14.8	2,405	6,433
1924	5,392	4,756	11.8	1,923	6,679
1925	6,002	5,450	9.2	1,861	7,311
26	5,770	5,314	7.9	1,955	7,269
[illegible]	5,389	5,002	7.2	2,176	7,178
28	5,458	5,090	6.7	2,228	7,318
29	5,629	5,282	6.2	2,420	7,702
930	5,571	5,255	5.7	2,366	7,621
1931	5,611	5,263	6.2	2,211	7,476
1932	5,675	5,247	7.6	1,886	7,133
1933	5,673	5,244	7.6	1,989	7,233
1934	6,145	5,628	8.4	2,161	7,789
1935	6,443	5,859	9.1	2,194	8,053
1936	6,918	6,224	10.0	2,773	8,997
1937	7,334	6,604	10.0	3,205	9,809
1938	7,461	6,589	11.7	2,956	9,545
1939	7,754	6,493	16.3	2,872	9,365
1940	7,926	6,291	20.7	2,866	9,157
1941	7,539	6,057	19.7	2,762	8,819
1942	7,223	6,120	15.4	2,469	8,589
1943	8,403	7,489	10.9	2,340	9,829
1944	6,817	6,011	11.8	2,596	8,607
1945	5,930	5,343	9.9	3,622	8,965
1946	7,610	6,856	9.9	9,669	16,525
1947	7,164	6,414	10.5	7,701	14,115
1948	6,624	5,904	10.8	7,595	13,499
1949	5,963	5,219	12.5	6,929	12,148
1950	6,203	5,481	11.6	6,755	12,236

TABLE 26.—*Graduates of Approved Schools and Others Registered, 1922-1950*

Year	Graduates of Approved Schools		Others		Totals
	Number	Per Cent of Total	Number	Per Cent of Total	
1922	4,519	80.5	1,093	19.5	5,612
1923	5,196	80.8	1,237	19.2	6,433
1924	5,687	85.1	992	14.9	6,679
1925	6,314	86.4	997	13.6	7,311
1926	6,441	88.7	828	11.3	7,269
1927	6,410	89.4	768	10.6	7,178
1928	6,585	90.1	733	9.9	7,318
1929	7,003	91.0	699	9.0	7,702
1930	7,011	92.1	610	7.9	7,621
1931	6,932	92.8	544	7.2	7,476
1932	6,676	92.1	457	6.3	7,133
1933	6,774	93.7	459	6.3	7,233
1934	7,172	92.1	617	7.9	7,789
1935	7,360	91.3	693	8.5	8,053
1936	7,934	88.1	1,063	11.8	8,997
1937	8,391	85.5	1,418	14.4	9,809
1938	8,315	87.1	1,230	12.9	9,545
1939	8,067	86.2	1,298	13.8	9,365
1940	7,781	85.0	1,376	15.0	9,157
1941	7,770	87.9	1,049	11.9	8,819
1942	7,290	84.9	1,299	15.1	8,589
1943	8,640	87.9	1,189	12.2	9,829
1944	7,737	89.8	870	10.1	8,607
1945	8,233	91.8	732	8.1	8,965
1946	15,692	94.9	835	5.1	16,527
1947	13,097	93.0	1,018	7.0	14,115
1948	12,791	94.8	708	5.2	13,499
1949	11,378	93.7	770	6.3	12,148
1950	11,502	94.0	734	6.0	12,236
Totals	234,698	89.9	26,316	10.1	261,014

In New York a law approved April 10, 1946 provides that any osteopathic licentiate who had obtained the additional right to use instruments for minor surgical procedures and to use anesthetics, antiseptics, narcotics and biologic products or any applicant who has met or shall meet all the preliminary and professional requirements as required as of September 1, 1936 and has satisfactorily passed or shall satisfactorily pass the regular licensing examination shall be granted the right to practice medicine without limitation as defined by the statutes of the State of New York.

TABLE 27.—*Graduates of Unapproved Medical Schools Registered, 1945-1950*

	Examination						Reciprocity and Endorsement						Totals
	1945	1946	1947	1948	1949	1950	1945	1946	1947	1948	1949	1950	
Arizona	0	0	0	0	0	0	0	2	0	1	1	0	4
Arkansas	0	0	0	0	0	1	0	0	0	0	0	0	1
California	0	0	0	0	0	2	4	0	0	0	0	5	11
Dist. of Columbia	0	0	0	0	0	0	0	0	0	0	0	1	1
Florida	0	1	11	25	25	16	0	0	0	0	0	0	78
Georgia	0	0	0	0	1	1	0	0	0	0	3	0	5
Illinois	115	45	54	56	41	5	0	1	0	1	0	0	318
Iowa	0	1	0	0	0	0	0	1	0	0	0	0	2
Kentucky	0	0	2	0	2	0	0	0	0	0	0	0	4
Maine	0	0	0	0	0	0	0	0	0	0	2	1	3
Massachusetts	38	24	37	26	11	5	0	0	0	0	0	0	141
Michigan	0	0	0	0	0	0	0	0	0	0	0	1	1
Mississippi	0	4	0	3	0	1	0	0	0	0	0	0	8
Missouri	0	0	0	0	0	0	1	0	0	0	0	3	4
Nebraska	0	0	0	0	0	0	0	1	0	1	0	0	2
Nevada	0	0	0	0	0	0	2	0	0	0	0	0	2
New Hampshire	0	0	1	0	0	0	1	0	0	0	0	0	2
New Mexico	0	0	1	0	0	0	1	0	0	0	0	0	2
New York	0	111	132	60	94	7	0	0	0	0	0	0	404
North Carolina	0	0	0	0	0	3	0	0	0	0	0	0	3
Ohio	0	6	4	1	1	1	0	0	0	0	0	0	13
Pennsylvania	0	0	0	0	0	1	0	0	0	0	0	0	1
Tennessee	0	0	0	0	0	0	0	0	0	0	1	0	1
Texas	0	0	0	0	0	0	0	1	0	0	0	2	3
Virginia	3	10	4	1	3	0	0	1	0	0	0	0	22
Washington	0	2	4	1	1	0	0	0	0	0	0	0	8
West Virginia	0	0	0	0	2	0	0	0	0	0	0	0	2
Wisconsin	0	0	0	0	0	0	1	0	0	0	0	0	1
Alaska	0	0	0	0	1	0	0	0	0	0	0	0	1
Hawaii	0	0	0	0	2	2	0	0	0	0	0	0	4
Totals	156	204	250	173	184	45	10	7	0	3	7	13	1,052

TABLE 28.—*Graduates of Schools of Osteopathy Registered by Medical Boards, 1945-1950*

	Examination						Reciprocity and Endorsement						Totals
	1945	1946	1947	1948	1949	1950	1945	1946	1947	1948	1949	1950	
Alabama	0	0	1	0	0	0	0	0	0	0	0	0	1
Colorado	7	5	11	5	5	8	0	0	0	0	0	0	41
Connecticut	2	5	3	0	1	4	0	0	0	0	0	0	15
Delaware	0	0	0	0	0	0	0	4	0	0	1	0	5
Dist. of Columbia	0	0	0	0	0	1	1	1	1	2	1	1	8
Indiana	0	43	0	0	3	3	7	7	0	0	1	0	64
Massachusetts	5	0	2	2	0	0	0	2	1	5	3	3	23
Nebraska	2	0	1	0	1	0	0	0	0	0	0	0	4
New Hampshire	0	0	0	0	0	0	0	0	3	6	4	1	14
New Jersey	15	9	9	3	5	7	0	0	2	3	1	2	56
New York	0	5	134	34	11	34	0	0	75	13	2	3	311
Ohio	48	47	12	21	24	28	1	7	10	12	4	8	222
Oregon	0	0	0	1	0	0	14	12	16	8	5	0	56
South Dakota	0	0	0	0	0	1	0	0	0	0	0	1	2
Texas	29	42	38	33	15	35	1	0	0	1	9	5	208
Virginia	0	1	0	1	0	1	0	0	0	1	0	0	4
Wisconsin	1	1	3	2	1	4	15	11	3	6	1	0	48
Wyoming	0	0	0	0	0	0	0	1	0	0	0	1	2
Totals	109	158	214	102	66	126	39	45	111	57	32	25	1,084

A law passed in Ohio in 1943 gives osteopaths who obtain their licenses under that act the right to practice osteopathic medicine and surgery. In Oregon they are granted the right to practice "in the subjects" covered by the examination, which includes surgery. In South Dakota osteopaths may be registered to practice surgery.

The medical practice act of Texas provides for the issuing of a license to practice medicine only, and osteopaths are issued licenses unrestricted in scope. In Virginia osteopaths may obtain the right to use drugs and perform surgery with the use of instruments if they satisfy the board of medical examiners that they are qualified to do so. The Wisconsin law pertaining to the licensing of doctors of osteopathy was amended in 1950 and provides that an osteopath licensed in Wisconsin may obtain a license to practice medicine and surgery by (a) completing a refresher course in materia medica and pharmacology consisting of not less than 64 hours of lecture and 60 hours of laboratory work and (b) by passing an examination given by the board in those two subjects. In the future osteopaths will be given the same examination as physicians and if successful will be granted licenses to practice medicine and surgery. In Wyoming the statutes contain no specific provision for the licensing of osteopaths. The medical practice act of the latter state provides that the certificate issued to all applicants "shall be deemed licenses to practice medicine in all branches in which the applicant has taken examination in the state."

TABLE 29.—*Foreign Medical Schools*

List Prepared by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges

On the basis of information presently available, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the following foreign medical schools on the same basis that they consider graduates of approved medical schools in the United States. This list is not final and will be supplemented as information is compiled for other schools.

Belgium

Free University of Brussels Faculty of Medicine
(Université Libré de Bruxelles Faculté de Medicine)

Catholic University of Louvain Faculty of Medicine
(Université Catholique de Louvain Faculté de Medicine or Katholicke Universiteit te Leuven)

University of Ghent Faculty of Medicine
(Universiteit te Gent Faculteit der Geneeskunde, or Université de Gand Faculté de Médecine)

University of Liege Faculty of Medicine
(Université de Liége Faculté de Medicine)

Brazil

University of Sao Paulo Faculty of Medicine
(Universidade de Sao Paulo Faculdade de Medicina)

Denmark

University of Copenhagen Faculty of Medicine
(Kobenhavns Universitet Laegevidenskabelige Fakultet)

Finland

University of Helsinki Faculty of Medicine
(Helsingfors Universitet Medicinska Fakulteten)

Medical Faculty Turku University
(Turun Yliopiston Laaketieteellinen Tiedekunta)

Lebanon

American University of Beirut School of Medicine

Netherlands

University of Amsterdam Faculty of Medicine
(Universiteit van Amsterdam Geneeskunde Faculteit)

State University of Groningen Faculty of Medicine
(Rijks-Universiteit te Groningen Medische Faculteit)

State University of Leiden Faculty of Medicine
(Rijks-Universiteit te Leiden Faculteit der Geneeskunde)

State University of Utrecht Faculty of Medicine
(Rijks-Universiteit te Utrecht Faculteit der Geneeskunde)

Norway

University of Oslo Faculty of Medicine
(Kongelige Frederiks Universitet Medisinske Fakultet)

Sweden

Royal Charles University Medical Faculty, Lund
(Kungl. Karolinska Universitetet Medicinska Fakulteten)

Charles Medico-Surgical Institute, Stockholm
(Karolinska Mediko-Kirurgiska Institutet)

Royal University of Uppsala Medical Faculty
(Kungl. Universitetet i Uppsala Medicinska Fakulteten)

Switzerland

The recommendation with respect to the following medical schools in Switzerland applies only to those graduates of Swiss medical schools who hold the Swiss Federal Diploma issued by the Federal Department of the Interior (Eidgendoissisches Departement Des Innern, Departement Federal de L'Interieur) and obtainable only by Swiss citizens, or who hold the Certificate of Medical Studies (Akademische Zeugnis, Certificat d'Etudes Medicales) which is issued by the Departments of Education of the cantonal government and which is awarded to those not citizens of Switzerland who complete a course of study and pass examinations equivalent to those taken by Swiss citizens in qualifying for the Swiss Federal Diploma.

The recommendation does not apply to those holding only the M.D. degree from Swiss universities or those who have taken only faculty examinations and hold certificates other than the Swiss Federal Diploma of its equivalents: the Akademische Zeugnis or Certificat d'Etudes Medicales. The M.D. degree in Switzerland is frequently awarded on the basis of a thesis written during as little as one year in residence. Faculty diplomas may be issued to students who have not completed the full course of study and who have not passed the examinations required for the Swiss Federal Diploma or its equivalent.

Officials of State Boards and of other organizations who are in doubt as to the nature of credentials presented by individual graduates of Swiss schools are urged to communicate with the Director of the Schweizerisches Gesundheitsamt, Bern, Switzerland.

University of Basel Faculty of Medicine
(Universität Basel Medizinische Fakultät)

University of Bern Faculty of Medicine
(Universität Bern Medizinische Fakultät)

University of Geneve Faculty of Medicine
(Université de Genève Faculté de Medecine)

University of Lausanne Faculty of Medicine
(Université de Lausanne Faculté de Medecine)

University of Zurich Faculty of Medicine
(Universität Zurich Medizinische Fakultät)

United Kingdom

The recommendation applies only to those physicians trained in the United Kingdom who hold medical degrees from the universities listed. The recommendation does not apply to those physicians who received their medical training at these universities or their affiliated hospital medical schools but who did not complete the work for the degree and who obtained their qualifications only through the examinations of the licensing corporations of the United Kingdom.

England

University of Birmingham Faculty of Medicine
University of Bristol Faculty of Medicine
University of Cambridge Faculty of Medicine
University of Durham Medical School, Newcastle-upon-Tyne
University of Leeds Faculty of Medicine
University of Liverpool Faculty of Medicine
University of London †
University of Manchester Faculty of Medicine
University of Oxford Faculty of Medicine
University of Sheffield Faculty of Medicine

Northern Ireland

Queen's University of Belfast Faculty of Medicine

Scotland

University of Aberdeen Faculty of Medicine
University of Edinburgh Faculty of Medicine
University of Glasgow Faculty of Medicine
University of St. Andrews Medical School, St. Andrews and Dundee.

Wales

Welsh National School of Medicine, University of Wales, Cardiff

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† Work for the medical degree of the University of London is offered at the following hospital medical schools:

Charing Cross Hospital Medical School
Guy's Hospital Medical School
King's College Hospital Medical School
London Hospital Medical School
Middlesex Hospital Medical School
Royal Free Hospital School of Medicine
St. Bartholomew's Hospital Medical School
St. George's Hospital Medical School
St. Mary's Hospital Medical School
St. Thomas' Hospital Medical School
University College Hospital Medical School
Westminster Hospital Medical School

Licensure of Foreign Trained Physicians

In 1947 an advisory committee was formed at the instigation of the Council on Medical Education and Hospitals to assist in studying the problem of physici trained in foreign medical schools who desire to c

TABLE 30.—FOREIGN TRAINED PHYSICIANS EXAMINED

Marginal Number	SCHOOL	Alabama		Arkansas		California		Connecticut		Dist. of Columbia		Florida		Georgia		Illinois		Indiana		Iowa		Kansas		Maine		Maryland	
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F
	ALGERIA																										
1	Ecole de Plein Exercice de Medecine de Pharmacie, Alger	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ARGENTINA																										
2	Universidad Nacional de Buenos Aires	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	1	0
	AUSTRIA																										
3	Karl-Franzens-Universität, Graz	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
4	Leopold Franzens-Universität, Innsbruck	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
5	Universität Wien	..	..	..	..	2	1	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	1	0
	AUSTRALIA																										
6	University of Sydney	..	..	..	..	1	0	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
	BELGIUM																										
7	Université de Ghent	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	Université de Liege	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	Université de Louvain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
	BRAZIL																										
10	Faculdade de Medicina Cirurgia e Pharmacia, Bahia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
11	Universidade de Sao Paulo Faculdade de Medicina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	CHILE																										
12	Universidad de Chile, Santiago	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	CHINA																										
13	Peiping Union Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	Pennsylvania Medical School, Shanghai	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	Aurora University, Shanghai	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	Cheeloo University, Shantung	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	Hsiang Ya Medical College, Canton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1
18	St. John's University, Shanghai	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	University of Lingnan, Canton	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	COLOMBIA																										
20	Universidad de Antioguia, Medellin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	CUBA																										
21	Universidad de la Habana	..	..	..	..	0	2	..	..	..	..	2	1	1	0	8	12	1	0	..	..	..	..	..	..	..	..
	CZECHOSLOVAKIA																										
22	Univerzita Komenského, Bratislava	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	Masarykova Universita, Brno	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
24	Deutsche Universität, Prague	1	0	..	..	0	1	0	2	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	0
25	Universität Karlova, Praha	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	0
	DENMARK																										
26	Kobenhavns Universitet	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	DOMINICAN REPUBLIC																										
27	Universidad de Santo Domingo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ECUADOR																										
28	Universidad Central, Quita	..	..	..	..	..	..	..	..	0	1	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
	EL SALVADOR																										
29	Universidad de El Salvador	..	..	..	..	3	1	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
	ENGLAND																										
30	University of Durham (Kings College)	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	University of Liverpool	..	..	..	..	1	0	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
32	University of London	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
33	University of Manchester	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
34	University of Oxford	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
35	Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0
36	Licentiate in Medicine, Surgery and Midwifery of the Apothecaries' Society of London	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ESTONIA																										
37	Tartu Ulikooli	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	FINLAND																										
38	Helsingfors Universitet	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
	FRANCE																										
39	Université d'Aix-Marseille	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
40	Université de Montpellier	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
41	Université de Nancy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
42	Université de Paris	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
43	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
44	[illegible]	..	..	..	..	1	0	0	1	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	1	0
45	[illegible] Bonn	..	..	..	..	1	0	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
46	[illegible] Breslau	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..
47	[illegible]ankfurt-am-Main	..	..	..	..	2	0	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..
48	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
49	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0
50	Hessische Ludwigs-Universitat, Giessen	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
51	Hamburgische Universität	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	1	1	..	..	..	..
52	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
53	[illegible] Jena	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
54	[illegible] Kiel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
55	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
56	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
57	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
58	[illegible] München	..	..	..	..	1	0	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..
59	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
60	[illegible]ingen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..
61	[illegible] Vurzburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
62	[illegible]	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	GREECE																										
63	National University of Athens	..	..	..	..	..	..	..	..	..	..	1	0	..	..	1	2	..	..	..	..	..	..	..	..	..	..
	HAITI																										
64	Ecole Nationale de Medecine, Port-au-Prince	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
	HONDURAS																										
65	University of [illegible]	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..
66	Magyar Királyi [illegible]	..	..	..	..	3	0	..	..	1	0	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..
67	Magyar Király [illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
68	Magyar Király [illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
69	Magyar Király [illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1
	ICELAND																										
70	Haskoli Islands lae Knadeildin, Reykjavik	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	IRAN																										
71	Madresseh Teb, Teheran	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	IRAQ																										
72	Royal Iraq Medical College, Bagdad	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Massachusetts		Michigan		Minnesota		Missouri		New Hampshire		New Jersey		New York		North Carolina		North Dakota		Ohio		Oklahoma		Pennsylvania		Rhode Island		South Carolina		South Dakota		Texas		Virginia		Washington		U. S. Territories and Possessions		Totals	Examined—Passed	Examined—Failed	Percentage Failed	Number of Boards Examined by	Marginal Number
P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F						
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	2
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	0	4	100.0	2	3
0	1	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	3	4
..	..	..	..	1	0	..	..	..	..	..	..	12	27	..	..	..	..	2	1	..	..	2	0	1	0	1	0	..	..	..	..	1	0	..	..	..	..	54	23	31	57.4	10	5
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	6
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	7
..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	1	8
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	9
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	10
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	11
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	12
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	13
..	..	..	..	..	..	..	..	..	..	0	1	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	3	100.0	2	14
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	15
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	2	1	1	50.0	2	16
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	17
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	2	2	0	0.0	2	18
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	19
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	20
1	1	..	..	..	..	1	0	..	..	..	..	2	2	1	0	..	..	..	..	..	..	..	..	0	1	..	..	..	..	0	1	..	..	..	..	..	..	37	17	20	54.0	11	21
..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	2	33.3	2	22
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	23
0	1	..	..	..	..	..	..	..	..	..	..	4	15	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	8	20	71.4	8	24
..	..	..	..	..	..	..	..	..	..	..	..	3	10	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	6	12	66.7	4	25
..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	3	2	1	33.3	3	26
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	2	100.0	1	27
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..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	2	33.3	3	29
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	30
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..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	1	32
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	33
..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	34
1	0	..	..	1	0	..	..	..	..	..	..	2	5	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	14	9	5	35.7	8	35
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	36
0	1	..	..	..	..	..	..	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	5	4	1	20.0	4	37
0	1	..	..	1	0	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	2	3	60.0	4	38
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	39
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	2	40
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	41
..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	50.0	1	42
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	43
..	..	..	..	..	..	..	..	..	..	..	..	6	14	..	..	..	..	1	2	..	..	..	..	..	..	..	..	1	0	1	0	..	..	..	..	..	..	31	13	18	58.1	8	44
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	50.0	3	45
0	1	..	..	..	..	..	..	..	..	..	..	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	4	5	55.6	3	46
..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	5	3	37.5	4	47
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	2	100.0	1	48
..	..	..	..	1	0	..	..	..	..	..	..	1	1	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	2	33.3	4	49
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	50
..	..	..	..	..	..	..	..	..	..	0	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	2	5	71.4	4	51
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	0	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	2	33.3	4	52
..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	1	53
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	54
..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	1	55
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	2	56
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	3	100.0	2	57
..	..	..	..	..	..	..	..	..	..	..	..	0	5	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	11	4	7	63.6	5	58
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	2	59
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	4	2	2	50.0	3	60
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	61
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	3	75.0	2	62
..	..	..	..	..	..	..	..	0	1	..	..	1	5	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	4	9	69.2	5	63
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	64
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	65
0	1	..	..	..	..	..	..	..	..	..	..	1	6	..	..	0	1	1	1	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	18	8	10	55.6	8	66
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	0	4	100.0	2	67
..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	3	6	66.7	3	68
..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	3	75.0	2	69
..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	70
..	..	..	..	..	..	..	..	..	..	..	..	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	2	33.3	1	71
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	72

TABLE 30.—FOREIGN TRAINED PHYSICIANS EXAMINED FOR

Marginal Number	SCHOOL	Alabama		Arkansas		California		Connecticut		Dist. of Columbia		Florida		Georgia		Illinois		Indiana		Iowa		Kansas		Maine		Maryland	
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F
	IRELAND																										
73	National University of Ireland	..	..	..	..	2	0	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	1	0
74	University of Dublin	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
75	Queen's University, Belfast	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
76	Licentiate of the Royal College of Physicians and Licentiate of the Royal College of Surgeons, Ireland	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
77	Licentiate of the Apothecaries' Hall, Dublin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ITALY																										
78	Regia Università di Bari	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
79	Regia Università di Bologna	..	..	..	..	0	1	0	1	..	..	..	..	..	..	0	1	..	..	..	..	..	..	0	1	0	1
80	Regia Università di Catania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
81	Regia Università di Firenze	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
82	Regia Università di Genova	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
83	Regia Università di Messina	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
84	Regia Università di Milano	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
85	Regia Università di Modena	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
86	Regia Università di Napoli	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
87	Regia Università di Padova	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
88	Regia Università di Pavia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
89	Regia Università di Palermo	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
90	Regia Università di Pisa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
91	Regia Università di Roma	..	..	..	..	1	1	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	0
92	Regia Università di Siena	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
93	Regia Università di Torino	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	JAPAN																										
94	Osaka Imperial	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
95	Tokyo Charity	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	LATVIA																										
96	University of Riga	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	LEBANON																										
97	American University of Beirut	..	..	..	..	..	..	2	0	1	0	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
	LITHUANIA																										
98	Vytauto Didziojo Universiteto, Kaunas	..	..	..	..	1	0	..	..	..	..	..	..	..	..	5	8	..	..	..	..	..	..	..	..	0	3
	MANCHUKUO																										
99	Mukden Medical College	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	MEXICO																										
100	Universidad de Guadalajara	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
101	Universidad Nacional, Mexico City	..	..	..	..	4	3	2	1	..	..	..	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..
102	Escuela de Medicine, Oaxaca	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
103	Escuela de Medicine de Nuevo Leon, Monterrey	..	..	..	..	1	0	..	..	..	..	1	0	..	..	0	1	..	..	..	..	..	..	..	..	..	..
	NETHERLANDS																										
104	Universiteit van Amsterdam	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
105	Rijks-Universiteit te Leiden	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
106	Rijks-Universiteit te Utrecht	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	NICARAGUA																										
107	Universidad de Nicaragua, Leon y en Granada	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
	NORWAY																										
108	Universitet Oslo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	PERU																										
109	Universidad Mayor de San Marcos	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	PHILIPPINES																										
110	University of Santo Tomas, Manila	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
111	University of Philippines, Manila	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	POLAND																										
112	Uniwersytet Jagiellónski, Cracow	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..
113	Marie Curie Uniwersytet, Lublan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
114	Uniwersytet Jana Kazimierza, Lwow	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
115	Uniwersytet Poznánski, Poznán	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
116	Uniwersytet Jozefa Pilsudskiégo, Warszawa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	0
117	Uniwersytet Stefana Batorego, Wilno	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	PORTUGAL																										
118	University of Lisbon	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	RUMANIA																										
119	Universitatea din Bucuresti	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1
120	Universitatea din Cluj	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SCOTLAND																										
121	University of Aberdeen	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
122	University of Edinburgh	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
123	University of Glasgow	..	..	..	..	..	..	1	0	1	0	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
124	Licentiate of the Royal College of Physicians and Surgeons of Edinburgh, and Licentiate of the Royal Faculty of Physicians and Surgeons of Glasgow	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SOUTH AFRICA																										
125	University of Witwatersrand, Johannesburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SPAIN																										
126	Universidad de Barcelona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
127	Universidad de Salamanca	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
128	Universidad de Valencia	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
129	Universidad de Zaragoza	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SWEDEN																										
130	Medico-Surgico Institute, Stockholm	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SWITZERLAND																										
131	Universitäte Basel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	0
132	Universitäte Bern	..	..	..	..	1	1	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
133	Université de Genève	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
134	Université de Lausanne	..	..	1	0	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0
135	Universität Zurich	..	..	..	..	1	0	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	UNION OF SOCIALIST SOVIET REPUBLICS																										
136	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
137		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
138		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
139		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
140		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
141	Severo-Kayka Medical Institute, Rostov-on-the-Don	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	VENEZUELA																										
142	University of Caracas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	YUGOSLAVIA																										
143	Beogradskog Universiteta	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
144	Zagrebaskog Universiteta	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
		1		1		69		20		8		11		2		100		1		1		2		1		25	
		1		1		47		9		6		9		2		46		1		1		1		0		17	
		0		0		22		11		2		2		0		54		0		0		1		1		8	
		0.0		0.0		31.9		55.0		25		182		0.0		54.0		0.0		0.0		50.0		100.0		32.0	

Massachusetts		Michigan		Minnesota		Missouri		New Hampshire		New Jersey		New York		North Carolina		North Dakota		Ohio		Oklahoma		Pennsylvania		Rhode Island		South Carolina		South Dakota		Texas		Virginia		Washington		U. S. Territories and Possessions		Totals	Examined—Passed	Examined—Failed	Percentage Failed	Number of Boards Examined by	Marginal Number
P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F						
..	..	..	..	..	..	..	..	..	..	..	..	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	12	5	29.4	4	73
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	74
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	75
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	76
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	77
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	3	100.0	1	78
0	1	..	..	..	..	..	..	..	..	0	2	4	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27	4	23	85.2	8	79
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	2	100.0	1	80
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	81
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	2	82
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	3	83
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	84
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	85
0	2	..	..	..	..	..	..	..	..	..	..	5	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	5	11	68.8	3	86
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	3	87
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	3	2	1	33.3	2	88
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	2	5	71.4	2	89
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	3	100.0	2	90
0	2	..	..	..	..	..	..	..	..	1	1	4	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	8	9	52.9	6	91
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	92
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	2	93
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	94
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	1	1	50.0	1	95
..	..	..	..	..	..	..	..	..	..	..	..	0	5	..	..	..	..	2	0	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	10	5	5	50.0	4	96
..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	6	2	25.0	4	97
..	..	..	..	..	..	..	..	..	..	..	..	2	8	..	..	..	..	7	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35	15	20	57.1	5	98
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	99
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	3	100.0	1	100
0	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	2	0	22	13	9	40.9	7	101
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	102
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	3	103
..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	0	0.0	3	104
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	105
..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	50.0	1	106
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	107
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	2	2	0	0.0	2	108
..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	109
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	2	1	1	50.0	2	110
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	111
..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	..	0	1	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	7	6	46.2	4	112
..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	113
..	..	..	..	..	..	..	..	..	..	..	..	6	10	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	8	11	57.9	3	114
..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	4	80.0	3	115
..	..	..	..	..	..	..	..	..	..	..	..	1	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	3	7	70.0	3	116
..	..	..	..	1	0	..	..	..	..	..	..	3	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	4	5	55.6	2	117
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	118
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	0	5	100.0	3	119
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	2	120
..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	121
..	..	1	0	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	0	0.0	3	122
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	0	0.0	3	123
..	..	..	..	..	..	..	..	..	..	0	1	5	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	19	6	13	68.4	4	124
..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	1	125
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	126
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	127
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	128
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	1	0	0.0	1	129
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	130
..	..	..	..	1	0	..	..	..	..	..	..	2	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	4	6	60.0	3	131
..	..	..	..	..	..	..	..	..	..	..	..	4	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	6	7	53.8	4	132
0	2	..	..	..	..	..	..	..	..	..	..	3	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	5	8	61.5	2	133
..	..	..	..	..	..	..	..	..	..	..	..	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	3	7	70.0	4	134
..	..	..	..	..	..	..	..	..	..	..	..	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	19	12	7	36.8	5	135
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	136
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	137
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	138
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	139
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	140
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	141
0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	142
..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	50.0	2	143
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	2	144
18		1		9		2		1		8		433		6		6		38		1		4		2		1		5		7		2		3		10		799	..	..	....	..	
2		1		9		2		0		2		140		5		4		25		1		2		1		1		5		4		2		3		9		..	359	..	....	..	
16		0		0		0		1		6		293		1		2		13		0		2		1		0		0		3		0		0		1		..	..	440	....	..	
88.9		0.0		0.0		0.0		100.0		75.0		67.7		16.7		33.3		34.2		0.0		50.0		50.0		0.0		0.0		42.9		0.0		0.0		10.0		..	..	..	55.0	..	

to the United States and establish a medical practice. Eighteen organizations and governmental agencies, in addition to the Council, are represented on the committee. In 1949 the committee recommended that the Council, in collaboration with the Association of American Medical Colleges, give consideration to the preparation of a limited listing of foreign medical schools. On the basis of data already in the Council's files, published reports, personal reports from American physicians who have visited foreign medical schools and the records of the

TABLE 31.—*Requirements of Candidates for Medical Licensure on the Basis of Credentials Obtained in Countries Other Than the United States and Canada*

	Admitted to Examination	Admitted by Endorsement of State License*	Citizenship	Basic Science Certificate	Internship or Residency in Hospital in United States	Further Medical Training	Examination Fee, Dollars	Footnotes
Alabama	x	..	x	..	x	..	10	1
Arizona	Not accepted[30]							
Arkansas	Not accepted							
California	x	x	x	..	x	x	25	2
Colorado	x	..	x	x	x	x	25	7, 8, 25
Connecticut	x	x	1stP	x	..	..	25	3, 28
Delaware	x	..	x	..	x	..	25	4
District of Columbia	x	x	..	x	x	..	25	5, 28
Florida	x	..	x	x	..	..	25	6, 24
Georgia	x	x	x	..	..	..	20	24
Idaho	Not accepted							
Illinois	x	..	1stP	..	x	..	15	..
Indiana	x	..	..	..	..	x	25	7
Iowa	x	..	x	x	x	x	25	8, 26
Kansas	x	..	x	..	x	..	25	9
Kentucky	Not accepted							
Louisiana	Not accepted							
Maine	Not accepted							
Maryland	x	..	1stP	..	x	..	20	26
Massachusetts	x	..	1stP	..	..	..	25	29
Michigan	x	..	..	x	x	x	25	7
Minnesota	x	..	1stP	x	x	..	20	12
Mississippi	x	..	x	..	x	..	10	13, 24
Missouri	x	..	x	..	x	..	15	12
Montana	Not accepted							
Nebraska	x	..	x	x	..	..	25	22, 28
Nevada	Not accepted							
New Hampshire	x	x	x	..	x	..	30	14, 28, 34
New Jersey	x	x	x	..	x	..	25	15
New Mexico	x	..	1stP	x	..	..	50	27
New York	x	x	1stP	..	..	..	25	16, 28
North Carolina	Not accepted							
North Dakota	x	..	x	..	x	x	25	11, 17, 31
Ohio	x	x	1stP[32]	..	..	..	25	28, 33
Oklahoma	Not accepted							
Oregon	x	..	x	x	x	..	25	24
Pennsylvania	x	..	1stP	..	x	..	25	19, 28
Rhode Island	x	..	1stP	x	x	x	20	20, 28
South Carolina	Not accepted							
South Dakota	x	..	1stP	x	x	..	20	28
Tennessee	x	..	x	x	..	..	25	24
Texas	x	..	..	x	x	..	25	21, 24
Utah	Not accepted							
Vermont	Not accepted[14]							
Virginia	x	..	1stP[23]	..	..	..	25	24
Washington	x	..	..	x	x	..	25	24
West Virginia	Not accepted							
Wisconsin	x	..	1stP	x	..	..	25	24
Wyoming	Not accepted							
Alaska	x	x	x	x	x	..	25	..
Guam	x	..	..	..	x	..	50	..
Hawaii	x	..	x	..	x	..	25	14, 24
Puerto Rico	x	x	x	..	x	..	30	..
Virgin Islands	x	..	..	..	x	..	65	24

This summary should be supplemented by direct communication with the secretary of the licensing board of the state in which the physician is interested.

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x. Implies Yes.

* Refer to chart "Reciprocity and Endorsement Policies" for further data.

1. Candidate is eligible if his credentials have been appraised by the National Board of Medical Examiners and approved.

2. (a) Citizenship waived if country in which applicant is licensed will admit to licensure citizens of the United States. (b) Acceptable for reciprocal registration if license submitted was granted on same standards as in effect in California on the same date and upon completion of an oral, clinical and written examination. (c) Internship in United States satisfactory to the board or completion of senior year in approved medical school in the United States.

3. Graduates of medical schools outside of the United States, Canada or the British Isles subsequent to Jan. 1, 1940 not eligible.

4. Residence of one year in Delaware required.

5. (a) Acceptable for reciprocal registration if similar privileges are accorded licentiates of District of Columbia by licensing agency or jurisdiction from which the applicant comes. (b) Regulations cited refer also to graduates of Canadian schools.

6. Senior year in an approved medical school in the United States or Canada, possess the degree of Master of Public Health from an acceptable school, or satisfactorily complete a one year's assistant residency, residency or fellowship in an approved hospital in the United States accepted as further training.

7. Further training—Completion of senior year in approved medical school in the United States.

8. Further training—Internship or one year in medical school in the United States.

9. (a) Applicant must be licensed to practice medicine and surgery in country in which sc[illegible] located, otherwise required to complete senior year [illegible] school in United States. (b) In lieu of internship, [illegible] graduates of the applicant's medical school licens[illegible] in United States accepted.

10. (a) Applicant must be licensed to practice medicine and surgery in country in which school of graduation is located, otherwise required to complete senior year in approved medical school in United States. (b) No applications accepted from countries other than England (certain schools), Ireland, Scotland and Australia.

11. Citizenship requirements waived for displaced physicians.

12. Credentials must be submitted in original form and accompanied by translation, and will be directly verified or documents should bear evidence of being visaed by the U. S. Consul in the country wherein the school of graduation is or was located.

13. Evidence must show school of graduation was acceptable at time of issuance of diploma.

14. Diplomates of National Board of Medical Examiners eligible on reciprocity basis.

15. (a) Internship completed in foreign countries after July 1, 1934 not acceptable. (b) Graduates of medical schools of Europe and Asia prior to Nov. 19, 1941 not accepted. (c) Graduates of medical schools of South American Republics, Mexico and Cuba not accepted.

16. Graduates of continental European medical schools after Jan. 1, 1940 not acceptable. Graduates of medical schools in Mexico and Latin and South America required to complete two years of approved internship or postgraduate medical study.

17. License to practice medicine and surgery in country in which school of graduation is located, otherwise required to complete senior year in approved medical school in United States.

18. Applicants limited to university medical schools of Great Britain.

19. Medical education completed in foreign medical schools since 1941 not acceptable.

20. (a) Matriculants in foreign medical faculties subsequent to Jan. 1, 1949 not acceptable. (b) Applicant must be licensed to practice medicine and surgery in which school of graduation is located.

21. European graduates after 1939 limited to English speaking schools.

22. Internship of one year in an approved hospital in the United States after acquiring full citizenship required. If application is accepted, the board has established basic recommendations which must be met prior to citizenship.

23. This requirement may be waived.

24. Recognition limited to graduates of schools accepted by Council on Medical Education and Hospitals of the American Medical Association and Executive Council of Association of American Medical Colleges.

25. Graduates of foreign medical schools after Jan. 1, 1940 not accepted.

26. Graduates of foreign medical schools are considered individually. Graduates of medical schools in Europe who obtained the medical degree after Jan. 1, 1940 are not eligible unless they have graduated from one of the schools listed by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges, or have done some special work in an approved medical school in the United States or a recognized hospital.

27. Graduates of foreign medical schools not included on list issued by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges may be accepted if they possess either a certificate of the National Board of Medical Examiners or the certificate of one of the American boards in the specialties.

28. List of foreign medical schools prepared by the Council on Medical Education and Hospitals of the American Medical Association and Executive Council of the Association of American Medical Colleges accepted.

29. Graduates of foreign medical schools who matriculated in medical school prior to Jan. 1, 1941 are eligible to apply for admission to the examinations. Graduates after Jan. 1, 1941 must be graduates of a medical school approved by the Approving Authority for Colleges and Medical Schools of the Commonwealth of Massachusetts, The Approving Authority has not approved any foreign medical schools.

30. Permissible by law at the discretion of the board.

31. Graduates of continental European medical schools after 1939 not accepted.

32. Ruling regarding acceptance of first papers expires July 1, 1951. Unless extended full citizenship will be required.

33. Graduates of medical schools of continental Europe subsequent to 1943 not accepted.

34. Temporary license valid until citizenship is completed may be given.

performance of the graduates of foreign schools in state licensing examinations over a period of ten years, a preliminary list of foreign schools was published in February 1950 by the Council on Medical Education and Hospitals and the Executive Council of the Association of American Medical Colleges. In the preamble to this list, these two agencies state that they are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the medical schools listed on the same basis as graduates of approved medical schools in the United States. It was considered desirable to issue a preliminary listing rather than to wait until information could be compiled for all medical schools of the world, a process that will require years to complete. Since the initial list of thirty-eight schools was prepared in February 1950, six schools were added in July 1950 and five in February 1951. Since the list is still a preliminary one and other institutions will undoubtedly be added in the future, the position of the Council and the Executive Council with respect to schools not on this list is that they neither approve nor disapprove these schools but must leave to the individual institutions and organizations in the United States the decision whether they will accept graduates of these schools on the same basis that they accept graduates of approved medical schools in the United States. The forty-nine medical faculties comprising the current list are included in table 29.

Twenty-three licensing boards have reported the acceptance of this list in the consideration of applicants for licensure. Eleven of these boards stipulate that recognition is limited to graduates of schools on the list, two boards specify that graduates of foreign medical faculties after January 1, 1940 are not eligible unless they have graduated from a school on the published list; one board will accept other graduates if they possess either a certificate of the National Board of Medical Examiners or one of the American boards in the specialties. The remaining nine boards have reported they accept the list but do not specify whether or not they also accept graduates of other schools. Foreign-trained physicians are not eligible for licensure in fifteen states.

The present requirements for candidates seeking medical licensure in the United States and its territories and outlying possessions on the basis of credentials obtained in countries other than the United States and Canada are given in table 31. Thirty-nine boards will admit foreign physicians to the licensing examination under varying conditions, Georgia, Utah and the Virgin Islands which heretofore did not license foreign physicians have modified their regulations and will now accept applications for licensure. Seven boards do not require citizenship, while nineteen boards require full citizenship. Thirteen boards require that the applicant file first citizenship papers only. North Dakota which requires full citizenship will waive this requirement for displaced physicians and Virginia reported it may waive the requirement of first papers. Most states indicate the foreign graduate must serve an internship or residency or obtain further medical training in the United States. Other regulations apply equally to graduates of American medical schools.

From a review of table 31 it would appear that the opportunities for the licensure of foreign-trained physicians is being given consideration by the authorities in various states. In addition, Iowa, Kansas, North Dakota and South Dakota are attempting to aid the displaced physician in establishing a practice in the United States.

OFFICERS OF STATE BOARDS OF MEDICAL EXAMINERS

Alabama	Dr. D. G. Gill, 537 Dexter Ave., Montgomery 4.
Arizona	Dr. J. H. Patterson, 316 W. McDowell Road, Phoenix.
Arkansas	Dr. Joe Verser, Harrisburg.
California	Dr. Frederick N. Scatena, 1020 N. Street, Sacramento 14.
Colorado	Dr. George H. Gillen, 831 Republic Bldg., Denver 2.
Connecticut	Dr. Creighton Barker, 160 St. Ronan St., New Haven.
Delaware	Dr. J. S. McDaniel, 229 S. State Street, Dover.
District of Columbia	Dr. Daniel L. Seekinger, 4130 E. Municipal Building, Washington.
Florida	Dr. Homer Pearson, 701 Dupont Bldg., Orlando.
Georgia	Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.
Idaho	Mr. Armand L. Bird, 305 Sun Bldg., Boise.
Illinois	Mr. Charles F. Kervin, Capitol Bldg., Springfield.
Indiana	Dr. Paul R. Tindall, 1138 K of P Building, Indianapolis 4.
Iowa	Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.
Kansas	Dr. O. W. Davidson, 772 New Brotherhood Bldg., Kansas City.
Kentucky	Dr. Bruce Underwood, 620 S. Third Street, Louisville 2.
Louisiana	Dr. R. B. Harrison, 1507 Hibernia Bank Building, New Orleans.
Maine	Dr. A. P. Leighton, 192 State Street, Portland.
Maryland	Dr. Lewis P. Gundry, 1215 Cathedral Street, Baltimore 1.
Massachusetts	Dr. Robert C. Cochrane, Room 37, State House, Boston 33.
Michigan	Dr. J. E. McIntyre, 100 W. Allegan Street, Lansing 8.
Minnesota	Dr. J. F. DuBois, 230 Lowry Medical Arts Building, St. Paul 2.
Mississippi	Dr. Felix J. Underwood, Jackson 113.
Missouri	Mr. John A. Hailey, State Capitol Building, Jefferson City.
Montana	Dr. Sidney A. Cooney, 7 W. 6th Ave., Helena.
Nebraska	Mr. Oscar F. Humble, Room 1009, State Capitol Building, Lincoln.
Nevada	Dr. G. H. Ross, 112 N. Curry Street, Carson City.
New Hampshire	Dr. John S. Wheeler, 107 State House, Concord.
New Jersey	Dr. E. S. Hallinger, 28 West State St., Trenton.
New Mexico	Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.
New York	Dr. J. L. Lochner, 23 S. Pearl Street, Albany.
North Carolina	Dr. Joseph J. Combs, 419 Professional Bldg., Raleigh.
North Dakota	Dr. C. J. Glaspel, Grafton.
Ohio	Dr. H. M. Platter, 21 S. Broad Street, Columbus.
Oklahoma	Dr. F. C. Gallaher, 813 Braniff Building, Oklahoma City.
Oregon	Mr. Howard I. Bobbit, 609 Failing Building, Portland 4.
Pennsylvania	Mrs. M. G. Steiner, 351 Education Building, Harrisburg.
Rhode Island	Mr. Thomas B. Casey, 366 State Office Building, Providence.
South Carolina	Dr. N. B. Heyward, 1329 Blanding Street, Columbia.
South Dakota	Dr. Clarence E. Sherwood, 109 Center St., W., Madison.
Tennessee	Dr. H. W. Qualls, 1635 Exchange Building, Memphis 3.
Texas	Dr. M. H. Crabb, 1714 Medical Arts Building, Fort Worth.
Utah	Mr. Frank E. Lees, 314 State Capitol Building, Salt Lake City 1.
Vermont	Dr. F. J. Lawliss, Richford.
Virginia	Dr. K. D. Graves, 631 First St., S.W., Roanoke.
Washington	Mr. J. D. McDougall, Olympia.
West Virginia	Dr. N. H. Dyer, Capitol Bldg., Charleston 5.
Wisconsin	Dr. C. A. Dawson, Tremont Bldg., River Falls.
Wyoming	Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.
Alaska	Dr. W. M. Whitehead, Box 140, Juneau.
Canal Zone	Dr. S. D. Avery, Balboa Heights.
Guam	Dr. John Y. Battenfeld, Agana.
Hawaii	Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.
Puerto Rico	Mr. Luis Cueto Coll, Box 3717, Santurce.
Virgin Islands	Dr. Earle M. Rice, St. Thomas.

The Federation of State Medical Boards of the United States at its meeting in February 1951 adopted the following resolution:

RESOLVED, That all graduates of continental European medical schools who obtained their medical education after 1938 in schools not on the list maintained by the Council on Medical Education and Hospitals and the Association of American Medical Colleges as printed in the Journal of the American Medical Association in February 1950, and graduates of Latin American medical schools be required to complete two years of additional approved medical education in the United States and the Dominion of Canada, before being admitted to a State Board licensing examination.

While an attempt has been made to present the situation as it exists, it should be borne in mind that this tabulation is intended to present a summary of existing requirements and that the licensure of all physicians is one of the "State's Rights" and physicians are urged to supplement the information contained in table 31 by direct communication with the licensing boards.

TABLE 32.—*Graduates of Foreign Medical Faculties Representing Additions to the Medical Profession, 1950*

	Examination	Reciprocity and Endorsement	Total
California	39	2	41
Connecticut	7	2	9
District of Columbia	2	0	2
Florida	3	0	3
Georgia	1	0	1
Illinois	38	0	38
Indiana	1	0	1
Iowa	1	0	1
Maryland	9	0	9
Massachusetts	1	0	1
Mississippi	1	0	1
Missouri	1	0	1
New Jersey	2	0	2
New York	133	29	162
North Dakota	4	0	4
Ohio	12	0	12
Rhode Island	1	0	1
South Dakota	2	0	2
Texas	1	0	1
Virginia	1	0	1
Washington	3	1	4
Guam	0	7	7
Puerto Rico	1	0	1
Virgin Islands	3	0	3
Totals	267	41	308

TABLE 33.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1930-1950*

Year	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	285	170	40.2
1935	437	303	30.7
1936	588	382	35.0
1937	920	637	30.8
1938	1,164	716	38.5
1939	1,691	839	50.4
1940	2,088	948	54.7
1941	1,717	698	59.2
1942	1,630	890	45.4
1943	1,031	518	49.8
1944	691	325	53.0
1945	475	209	56.0
1946	495	221	55.3
1947	601	283	52.9
1948	639	311	51.3
1949	737	319	56.7
1950	799	359	55.0
Totals	16,695	8,536	48.2

Figures relating to foreign-trained physicians examined for medical licensure in 1950 are presented in table 30. These statistics represent both American and foreign-born physicians educated in countries other than the United States and Canada. Graduates of 139 medical schools and five licensing corporations were examined. The number examined totaled 799 and were tested in thirty states, the District of Columbia, Hawaii, Puerto Rico and the Virgin Islands. The number who were successful was 359; failures numbered 440 or 55 per cent. Graduates of the University of Vienna represented the largest group from any one school, 54, who were examined in ten states, with a failure percentage of 57.4. Fewer than 36 of the graduates of any other school were tested.

The greatest number of foreign-trained physicians examined for licensure last year by any one state (New York) was 433, of whom 140 passed and 293 (67.7 per cent) failed.

Represented in table 32 are figures regarding foreign-trained physicians registered in 1950 who were not previously licensed in the United States and therefore are additions to the medical profession. There were 308 physicians in this group, 267 of whom were licensed by written examination and 41 by endorsement of credentials.

Table 33 records the number of foreign-trained physicians examined for medical licensure in the United States in twenty-one years (1930 to 1950). In this period 16,695 were examined, of whom 8,536 passed and 48.2 per cent failed. The lowest percentage of failures in 21 years was 30.7 per cent in 1935.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

A basic science law provides for the establishment of a board of examiners and requires that each person who desires to practice the healing arts appear before that board and demonstrate his knowledge of the basic sciences. Such boards are distinct from licensing boards. A certificate of proficiency in the basic sciences does not authorize the possessor to practice the healing art; it enables him only to apply for licensure.

A basic science certificate is a prerequisite for medical licensure in 18 states, the District of Columbia and the Territory of Alaska. The states comprising this group, together with the year of enactment of their basic science law, are recorded in table 34. Basic science legislation was adopted in Nevada in 1951.

The subjects in which examinations are given are specified in the law. Table 35 lists the states and the subjects in which examination is required. These subjects are not uniform although all boards examine in anatomy, pathology and physiology, 18 examine in chemistry, 16 in bacteriology, 11 in hygiene, and two in diagnosis and in public health.

The laws in some states provide for certification without examination by exemption, waiver, reciprocity or endorsement. The credentials acceptable for certification by one of these methods are outlined in table 36.

The results of examinations given and the number of certificates issued on the basis of waiver, exemption, reciprocity or endorsement as reported by the basic science boards are shown in tables 37 and 38. The laws do not specify that a candidate reveal his school of practice. The lists submitted by the respective boards, however, have been checked with the biographic records of physicians and medical students maintained by the American Medical Association and with various directories. In this way it has been possible to determine the profession of the majority of candidates. By this means the data presented have been tabulated in four groups; namely, physicians, medical students and dentists; osteopaths; chiropractors and naturopaths, and unclassified applicants. The latter category includes those for whom it was not possible to determine the profession represented. It is probable that the majority of those in this latter group include osteopaths, chiropractors and naturopaths.

The twenty boards in operation in 1950 examined 5,225 candidates. The numbers examined in the four groups are shown in table 37. Physicians, medical students and dentists represent the greatest number examined. There were 2,989 in this group. There were also examined 210 osteopaths, 466 chiropractors and 1,105 in the unclassified group. Of all applicants 34.3 per cent failed, of the physicians, medical students and dentists examined 12.1 per cent failed, osteopaths 27.1 per cent, chiropractors 76.4 per cent and unclassified 51.1 per cent. Among those who passed there were 2,627 physicians, medical students or dentists, 153 osteopaths, 110 chiropractors and 540 unclassified candidates. The basic science board of Iowa examined the greatest number, representing 173 physicians or medical students, 126 osteopaths, 187 chiropractors and 549 others with 50.4 per cent failures. Florida, Michigan and Minnesota examined more than 600. The percentage of failures in these states was 30.0, 20.4 and 60.8, respectively. The lowest percentage of failures was in Oklahoma, 4.5 per cent. In 1950 only physicians or medical students were examined in this state.

TABLE 34.—*States Having Basic Science Laws and Year of Enactment*

Alaska	1946	Nebraska	1927
Arizona	1936	New Mexico	1941
Arkansas	1929	Oklahoma	1937
Colorado	1937	Oregon	1933
Connecticut	1925	Rhode Island	1940
District of Columbia	1929	South Dakota	1939
Florida	1939	Tennessee	1943
Iowa	1936	Texas	1949
Michigan	1937	Washington	1927
Minnesota	1927	Wisconsin	1925

TABLE 35.—*Subjects Included in Basic Science Examinations*

	Examinations Required in:							
	Anatomy	Bacteriology	Chemistry	Diagnosis	Hygiene	Pathology	Physiology	Public Health
Alaska	+	+	+	..	+	+	+	..
Arizona	+	+	+	..	+	+	+	..
Arkansas	+	+	+	..	+	+	+	..
Colorado	+	+	+	..	..	+	+	..
Connecticut	+	..	..	+	+	+	+	..
Dist. Columbia	+	+	+	..	..	+	+	..
Florida	+	+	+	..	..	+	+	..
Iowa	+	+	+	..	+	+	+	..
Michigan	+	+	+	..	+	+	+	+
Minnesota	+	+	+	..	+	+	+	..
Nebraska	+	+	+	..	+	+	+	..
New Mexico	+	+	+	..	..	+	+	..
Oklahoma	+	+	+	..	..	+	+	..
Oregon	+	..	+	..	+	+	+	..
Rhode Island	+	+	+	..	..	+	+	..
South Dakota	+	+	+	..	..	+	+	..
Tennessee	+	+	+	..	..	+	+	..
Texas	+	+	+	..	+	+	+	+
Washington	+	..	+	..	+	+	+	..
Wisconsin	+	..	..	+	..	+	+	..

It is the policy of the Arizona and Minnesota boards in reporting results of its examinations to omit the names of applicants who fail examinations. The numbers who fail are threfore recorded only in the total column.

Physicians, medical students and dentists were tested by all boards, osteopaths by 13 boards, chiropractors by 12 boards, while figures for 12 boards are included in the unclassified group.

Fifteen boards issued 2,526 certificates by reciprocity, endorsement, waiver or exemption. The number of successful applicants (5,956) registered by examination and by endorsement are recorded in table 38. Included in the total certified were 4,803 physicians, medical students and dentists, 249 osteopaths, 192 chiropractors and 712 others.

In twenty-four years, 37,487 physicians, medical students and dentists were examined, of whom 32,113 were successful in their examinations. In the same period 9,100 other practitioners were tested and 4,546 were successful. By both examination and endorsement (table 39) there were 42,383 certificates issued to physicians and 3,510 to other practitioners.

TABLE 36.—*Reciprocity, Endorsement, Waiver or Exemption Policies of Basic Science Boards*

	Credentials Accepted
Alaska	Certificate of National Board of Medical Examiners and license issued in states with which the Alaska Board of Medical Examiners reciprocates.
Arizona	(1) Certificate of basic science boards that examine in same subjects as does Arizona. (2) Examinations in same subjects as Arizona requires of other basic science boards accepted. Applicant required to take examination in other subjects. (3) Applicants from states having basic science boards accepted if license was issued prior to enactment of basic science law.
Arkansas	Certificate of basic science boards of all states except Florida, Iowa and New Mexico.
Colorado	(*a*) Certificates obtained by examination from the following basic science boards: Arizona, Arkansas, District of Columbia, Minnesota, Nebraska, New Mexico, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee and Texas. (*b*) Applicants who present basic science certificates from the Connecticut and Wisconsin boards are examined in chemistry and bacteriology. (*c*) Complete reciprocity with the Iowa Basic Science Board is granted to those whose original application was received on or before June 1, 1949. Others must pass four of the five subjects given by the Colorado Board.
Connecticut	No reciprocity. Board may in its discretion waive examination.
District of Columbia	Board may exempt an applicant and accept in lieu of examination proof that the applicant has passed before a basic science or licensing board an examination in subjects required by District of Columbia basic science board. Diplomates of the National Board of Medical Examiners may also be exempt from examination.
Florida	None.
Iowa	Certificate by exemption granted if credentials presented are equal to those of Iowa basic science board.
Michigan	Certificates from Arkansas, Minnesota and Nebraska basic science boards.
Minnesota	(*a*) Certificate of basic science boards of Arizona, Arkansas, Colorado, Michigan, Nebraska, Oklahoma, Oregon, South Dakota, Tennessee and Texas. (*b*) Applicants from Alabama, Georgia, Louisiana and the District of Columbia granted partial credit. (*c*) Medical Boards of Arizona, Indiana, Kentucky, Michigan, Missouri, New York, Oklahoma, Texas, Vermont and Virginia. (*d*) Part I of the examination of the National Board of Medical Examiners.
Nebraska	Certificate issued by waiver to applicants who have passed a written examination before another basic science board or licensing board in the six subjects required by Nebraska basic science board.
New Mexico	None.
Oklahoma	A certificate of Ability in the Basic Sciences is a prerequisite to examination for license (but not to license by reciprocity) by the Oklahoma Board of Medical Examiners. This certificate may be issued on the basis of exemption.
Oregon	Certificate in the basic sciences obtained by examination in Arkansas, Colorado, Iowa, Minnesota, Nebraska, New Mexico, South Dakota, Tennessee, Texas and Wisconsin.
Rhode Island	Endorsement with Massachusetts Board of Registration in Medicine.
South Dakota	Certificate of basic science boards, Arkansas, Colorado, Iowa, Minnesota, Nebraska, Oklahoma, Oregon, Tennessee, Texas and Wisconsin.
Tennessee	(*a*) Certificate of basic science boards of Arizona, Arkansas, Colorado, District of Columbia, Minnesota, Nebraska, New Mexico, Oklahoma, Oregon, South Dakota, Texas, Virginia and Wisconsin. (*b*) Granting of a certificate by waiver by accepting grades in required subjects earned by examination before a medical examining board or the National Board of Medical Examiners is handled on an individual basis.
Texas	Certificate of basic science boards of Arizona, Arkansas, Colorado, Iowa, Minnesota, Nebraska, Oklahoma, Oregon, South Dakota and Tennessee.
Washington	None.
Wisconsin	(*a*) Certificate of basic science boards of Arkansas, Iowa, Oregon, South Dakota and Tennessee. (*b*) Accepts certification on the basis of examination from any legally established board.

In 1950 there was a slight increase in the number of physicians examined while those certified without examination was 1,236 greater than in the previous year. The 2,176 physicians so registered in 1950 represents the largest number certified by basic science boards since their inception. Basic science boards are to be commended for the noticeable trend toward the recognition of basic science subjects of other boards, both medical and basic science.

Table 37.—*Applicants Examined in Basic Sciences, 1950*

	Physicians, Medical Students and Dentists		Osteopaths		Chiropractors and Naturopaths		Unclassified and Others		Total Examined	Passed	Failed	Percentage Failed
	P	F	P	F	P	F	P	F				
Alaska	1	1	0	0	0	0	0	0	2.	1	1	50.0
Arizona	36	0	1	0	0	0	5	0	65	42	23*	35.4
Arkansas	87	5	0	0	7	7	0	0	106	94	12	11.3
Colorado	128	7	2	1	0	0	23	25	186	153	33	17.7
Connecticut	134	4	2	0	14	22	0	0	176	150	26	14.8
District of Columbia	10	2	0	0	0	0	0	0	12	10	2	16.7
Florida	317	86	5	2	12	11	153	110	696	487	209	30.0
Iowa	171	2	89	37	36	151	217	332	1,035	513	522	50.4
Michigan	475	102	1	1	0	1	34	27	641	510	131	20.4
Minnesota	178	0	36	0	14	0	50	0	710	278	432*	60.8
Nebraska	120	22	0	0	9	8	2	2	163	131	32	19.6
New Mexico	30	4	0	0	0	0	9	2	45	39	6	13.3
Oklahoma	64	3	0	0	0	0	0	0	67	64	3	4.5
Oregon	112	25	3	5	2	1	10	41	199	127	72	36.2
Rhode Island **	67	19	3	0	0	0	0	0	89	70	19	21.3
South Dakota	30	4	1	0	0	2	20	15	72	51	21	29.2
Tennessee	190	28	0	0	0	0	11	10	239	201	38	11.2
Texas	115	31	1	1	0	2	0	0	150	116	34	22.7
Washington	185	12	7	8	1	91	0	0	304	193	111	36.1
Wisconsin	177	5	2	2	15	60	6	1	268	200	68	25.3
Totals—Examined	2,989		210		466		1,105		5,225			
Totals—Passed	2,627		153		110		540			3,430		
Totals—Failed	362		57		356		565				1,795	
Percentage Failed	12.1		27.1		76.4		51.1					34.3

* Nature of practice undeterminable since names of failures not supplied.

Table 38.—*Basic Science Certificates Issued by Examination, Reciprocity and Endorsement, 1950*

	Examination					Reciprocity, Endorsement, Exemption or Waiver					
	Physicians, Medical Students and Dentists	Osteopaths	Chiropractors and Naturopaths	Unclassified and Others	Totals	Physicians, Medical Students and Dentists	Osteopaths	Chiropractors	Unclassified and Others	Totals	Registered
Alaska	1	0	0	0	1	14	0	4	0	18	19
Arizona	36	1	0	5	42	42	6	2	27	77	119
Arkansas	87	0	7	0	94	51	0	1	0	52	146
Colorado	128	2	0	23	153	41	12	3	12	68	221
Connecticut	134	2	14	0	150	0	0	0	0	0	150
District of Columbia	10	0	0	0	10	79	1	0	0	80	90
Florida	317	5	12	153	487	0	0	0	0	0	487
Iowa	171	89	36	217	513	84	0	0	30	114	627
Michigan	475	1	0	34	510	26	16	8	21	71	581
Minnesota	178	36	14	50	278	152	1	3	15	171	449
Nebraska	120	0	9	2	131	43	0	0	4	47	178
New Mexico	30	0	0	9	39	0	0	0	0	0	39
Oklahoma	64	0	0	0	64	1	0	0	0	1	65
Oregon	112	3	2	10	127	43	10	10	22	85	212
Rhode Island*	67	3	0	0	70	0	0	0	0	0	70
South Dakota	30	1	0	20	51	29	0	7	15	51	102
Tennessee	190	0	0	11	201	95	4	1	9	109	310
Texas	115	1	0	0	116	1,297	43	16	0	1,356	1,472
Washington	185	7	1	0	193	0	0	0	0	0	193
Wisconsin	177	2	15	6	200	179	3	27	17	226	426
Totals	2,627	153	110	540	3,430	2,176	96	82	172	2,526	5,956

Comparing the 1950 figures in the other practitioner group with 1949 it can be noted that the total registered was 503 fewer. The number examined decreased 313 and those certified by endorsement 190.

The fees for examinations in the basic sciences in the states requiring such certification are given in table 40.

Examinations are given in most instances twice a year although some of the boards hold examinations quarterly.

Basic science laws have been enacted in order that all who seek to care for sick and injured persons can be tested to determine whether they possess a reasonable knowledge of the sciences fundamental to the healing art. The results of the examinations demonstrate that, in general, practitioners other than physicians are not adequately equipped in the fundamentals of medical care. This is particularly significant since the testing for basic science registration is made by nonmedical examiners.

Table 39.—*Total Candidates for Basic Science Certification, 1927-1950*

		Physicians, Medical Students and Dentists						Other Practitioners					
	No. of Boards	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified
1927	5	305	279	26	8.5	26	305	22	15	7	31.8	1	16
1928	6	646	586	60	9.3	19	605	59	31	28	47.5	0	31
1929	7	668	610	58	8.7	75	685	66	31	35	53.0	0	31
1930	7	685	606	79	11.5	118	724	78	30	48	61.5	4	34
1931	7	680	586	94	13.8	141	727	107	48	59	55.1	0	48
1932	7	657	590	67	10.2	106	696	78	44	34	43.6	12	56
1933	8	601	527	74	12.3	121	648	60	30	30	50.0	10	40
1934	9	815	725	90	11.0	127	852	51	26	25	49.0	11	37
1935	10	882	761	121	13.7	110	871	74	33	41	55.4	4	37
1936	10	1,032	891	141	13.7	230	1,121	66	26	40	60.6	13	39
1937	12	1,231	1,061	170	13.8	192	1,253	113	41	72	63.7	10	51
1938	12	1,168	1,026	142	12.2	267	1,293	158	70	88	55.7	26	96
1939	14	1,141	1,013	128	11.2	727	1,740	218	97	121	55.5	294	391
1940	16	1,303	1,140	163	12.5	324	1,464	280	153	127	43.9	22	175
1941	17	1,768	1,560	208	11.8	280	1,840	356	191	165	46.3	73	264
1942	17	1,725	1,476	249	14.4	213	1,689	497	249	248	49.9	91	340
1943	18	2,330	2,098	232	10.0	296	2,394	389	211	178	45.8	86	297
1944	18	2,284	1,868	416	18.2	222	2,090	465	276	189	40.6	87	363
1945	18	2,576	2,146	430	16.6	412	2,558	397	193	204	51.4	172	365
1946	19	2,937	2,391	546	18.7	1,308	3,699	313	167	146	46.6	166	333
1947	19	3,132	2,405	727	23.2	771	3,176	406	228	178	43.8	189	417
1948	19	3,000	2,601	399	13.3	1,069	3,670	827	437	390	47.1	349	786
1949	20	2,932	2,540	392	13.4	940	3,480	2,239	1,116	1,123	50.2	540	1,656
1950	20	2,989	2,627	362	12.1	2,176	4,803	1,781	803	978	54.8	350	1,153
Totals		37,487	32,113	5,374	14.3	10,270	42,383	9,100	4,546	4,554	50.0	3,510	8,056

Table 40.—*Basic Science Fees*

Alaska	$25	Nebraska	$10[5]
Arizona	20	New Mexico	25
Arkansas	10[1]	Oklahoma	15[4]
Colorado	25	Oregon	10
Connecticut	10	Rhode Island	10
District of Columbia	25	South Dakota	15
Florida	10	Tennessee	10[5]
Iowa	10	Texas	15[2]
Michigan	10[2]	Washington	10
Minnesota	15[2]	Wisconsin	10[6]

1. Reciprocity, $30.
2. Reciprocity, $25.
3. Waiver, $15.
4. Reciprocity, $50.
5. Reciprocity, $ 5.
6. Reciprocity, $15.

The present executive officer of each of the 20 basic science boards is as follows:

Arizona—Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

Arkansas—Mr. L. E. Gebauer, 1002 Donaghey Building, Little Rock.

Colorado—Esther B. Starks, D.O., 1459 Ogden Street, Denver.

Connecticut—Mr. M. G. Reynolds, 110 Whitney Avenue, New Haven 10.

District of Columbia—Dr. Daniel L. Seckinger, 4130 East Municipal Building, Washington.

Florida—Mr. M. W. Emmel, University of Florida, Gainesville.

Iowa—Dr. Ben H. Peterson, Coe College, Cedar Rapids.

Michigan—Miss Eloise LeBeau, 101 North Walnut Street, Lansing.

Minnesota—Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis 14.

Nebraska—Mr. Oscar F. Humble, Room 1009, State Capitol Building, Lincoln 9.

New Mexico—Mrs. Marguerite Cantrell, P. O. Box 1522, Santa Fe.

Oklahoma—Dr. Frank C. Gallagher, 813 Braniff Building, Oklahoma City.

Oregon—Dr. C. D. Byrne, University of Oregon, Eugene.

Rhode Island—Mr. Thomas B. Casey, 366 State Office Building, Providence.
South Dakota—Dr. G. M. Evans, 310 East 15th Street, Yankton.
Tennessee—Dr. O. W. Hyman, 874 Union Avenue, Memphis.
Texas—Bro. Raphael Wilson, 306 Nalle Bldg., Austin.
Washington—Mr. Edward C. Dohm, Olympia.
Wisconsin—Mr. William H. Barber, 621 Ransom Street, Ripon.
Alaska—Dr. C. Earl Albrecht, Box 1931, Juneau.

NATIONAL BOARD OF MEDICAL EXAMINERS

The certificate of the National Board of Medical Examiners is accepted as an adequate qualification for registration by the medical licensing authorities of all the forty-eight states except Florida, Montana, Texas and Wisconsin. It is also recognized by the District of Columbia, the territories of Alaska, Hawaii and Puerto Rico and by the Canal Zone.

The licensing board of Louisiana exempts diplomates of the National Board from the state examination if such candidates have also been licensed in some other state with which Louisiana has established reciprocal relations. Additional examinations are required by some licensing boards. These are oral examinations in Hawaii, Illinois, Rhode Island and Wyoming and a brief supplemental written examination in Maine and in Michigan.

The boards of examiners in the basic sciences of Alaska, Arkansas, Connecticut, Iowa, Minnesota, Oklahoma, Tennessee and the District of Columbia honor the examination of the National Board and give a qualifying certificate to its diplomates without further examination. The Nebraska Basic Science Board accepts the National Board's examination in most instances after reviewing the answer papers.

Diplomates of the National Board are admitted to the final examination of the Examining Board in England, of the Triple Qualifications Board of Scotland and of the Conjoint Board in Ireland. The National Board admits directly to parts II and III of its examinations the diplomates of these boards provided they hold a degree in medicine from an acceptable university. Diplomates may also be admitted without further examination to the Mayo Foundation for Medical Education and Research provided they possess the other necessary qualifications.

The states, territories and possessions which will endorse the certificate are recorded in table 41.

In addition, many medical schools accept the National Board's examinations as part of their own examination and promotion procedures and other schools recommend that they be taken. Some schools require students to pass Part I at the end of the second academic year and Part II at the end of the fourth year. Other schools require only that Part II be passed by the end of the fourth academic year. There are a few schools at which those students who voluntarily take and pass the board's examinations either in Part I or II are excused from the corresponding final school examinations.

The requirements for admission to the National Board examination include a standard four year high school course, two years of acceptable college work including courses in English, physics, chemistry and biology and medical training satisfactorily completed in approved medical schools in the United States and Canada. Graduates of the university medical schools of Great Britain and Ireland have been admitted to the examination, provided these graduates have been licensed to practice in the country in which the school attended is located. The National Board may also consider individually applicants who present credentials from other universities, the records of which have been adequately verified, with further evidence of having completed acceptable professional service in the United States and who are citizens of the United States. The National Board accepts the list of foreign medical schools, dated Feb. 7, 1950 and later additions, prepared by the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges.

In the following paragraphs data are presented for the thirty-second year regarding the examinations conducted and the issuance of certificates by the National Board.

The board was founded in 1915 and conducted its first examination in October 1916. From that date and up to and including a test given in June 1921, eleven examinations were given and 268 candidates were certified. The numbers examined during this period are recorded in annual figures in table 42.

TABLE 41.—*Licensing Boards Endorsing the Certificates of the National Board of Medical Examiners*

Alabama
Alaska [3]
Arizona
Arkansas [3]
California
Canal Zone
Colorado
Connecticut [3]
Delaware [4]
Dist. of Columbia [3]
Georgia
Hawaii [1]
Idaho
Illinois [1]
Indiana
Iowa [3]
Kansas
Kentucky
Louisiana
Maine [2]
Maryland
Massachusetts
Michigan [2]
Minnesota [3]
Mississippi
Missouri
Nebraska [3]
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma [3]
Oregon
Pennsylvania
Puerto Rico
Rhode Island [1]
South Carolina
South Dakota
Tennessee [3]
Utah
Vermont
Virginia
Washington
West Virginia
Wyoming [1]

1. Oral examination required.
2. Brief supplemental written examination required.
3. Examination in basic sciences accepted by state basic science board.
4. Requires two years of medical practice.

Some states exact additional requirements, i. e., a basic science certificate, proof of citizenship and an internship of one year. These are general requirements of all candidates for licensure.

TABLE 42.—*National Board Examinations, 1916-1921*

Year	Total Examined	Passed	Failed	Percentage Failed
1916	10	5	5	50.0
1917	40	31	9	22.5
1918	59	51	8	13.8
1919	52	51	1	1.9
1920	108	82	26	24.0
1921	56	48	8	14.2
Totals	325*	268	57	17.5

* Represents eleven examinations.

The examination since 1922 has been given in three parts: Part I, consisting of a written examination in six basic science subjects; Part II, a written examination in five mayor clinical divisions and their component subjects or subdivisions. Parts I and II are given in approved medical schools throughout the country while Part III is given under direction of local subsidiary boards in 27 centers at times sufficiently frequent to accommodate all eligible candidates. Examinations in parts I and II are held simultaneously in February, June and September. An examination in Part II only is held in April.

The tables that are hereinafter presented refer to the results of examinations in parts I, II and III since 1922 including those who passed and failed examinations and those certified.

Candidates are required to take all six subjects of Part I at a regular examination period unless entitled to take an incomplete examination. An incomplete examination is allowed candidates taking Part I at the end of their second year in medical schools whose third year curricula includes courses in one or two subjects of this part. The subjects postponed may be taken at any examination period after the candidate has completed them in medical school. They are recorded in the tabulations here presented under the heading "Incomplete Examinations" and are excluded in calculating the percentage of failures.

TABLE 43.—*National Board Examinations in Part I, 1922-1950*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February 1950	473	399	38	36	7.6
June 1950	2,196	1,310	677	209	9.4
September 1950	1,009	649	271	89	8.8
Totals	3,678	2,358	986	334	9.0
1922	388	263	58	67	20.3
1923	507	349	77	81	18.8
1924	591	415	69	107	20.5
1925	608	400	50	158	28.3
1926	625	436	104	85	16.3
1927	702	452	159	91	16.8
1928	843	533	231	79	12.9
1929	1,096	675	331	90	11.8
1930	1,260	801	345	114	12.5
1931	1,277	755	425	97	11.4
1932	1,307	847	371	89	9.5
1933	1,234	782	316	136	14.8
1934	1,241	809	347	85	9.5
1935	1,264	785	410	69	8.1
1936	1,344	858	363	123	12.5
1937	1,435	871	415	149	14.6
1938	1,654	986	508	160	14.0
1939	1,733	1,048	460	225	17.7
1940	1,653	1,069	375	209	16.4
1941	1,640	1,087	346	207	16.0
1942	1,867	1,204	471	192	13.8
1943	2,656	1,441	962	253	14.9
1944	4,229	2,326	1,465	438	15.9
1945	3,865	2,106	1,475	284	11.8
1946	3,148	1,695	1,189	264	13.5
1947	3,514	1,844	1,352	318	14.7
1948	3,807	2,178	1,262	367	14.4
1949	3,823	2,337	1,243	243	9.4
1950	3,678	2,358	986	334	9.0
Totals	52,989	31,710	16,165	5,114	9.6

TABLE 44.—*National Board Examinations in Part II, 1922-1950*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February 1950	244	243	0	1	0.4
April 1950	1,223	1,202	0	21	1.7
June 1950	304	301	0	3	0.9
September 1950	92	91	0	1	1.0
Totals	1,863	1,837	0	26	1.3
1922	109	90	0	19	17.4
1923	192	170	2	20	10.5
1924	267	227	0	40	15.0
1925	342	309	0	33	9.6
1926	381	334	1	46	12.1
1927	361	314	1	46	12.8
1928	410	371	1	38	9.3
1929	465	399	19	47	10.5
1930	620	543	7	70	11.4
1931	719	630	2	87	12.1
1932	732	674	0	58	7.9
1933	714	651	0	63	8.8
1934	633	583	0	50	7.9
1935	689	620	0	69	10.0
1936	768	716	2	50	6.5
1937	855	803	1	51	6.0
1938	861	815	0	46	5.3
1939	938	884	0	54	5.8
1940	1,028	963	9	56	5.5
1941	1,001	954	1	46	4.6
1942	1,072	1,031	0	41	3.8
1943	1,861	1,805	0	56	3.0
1944	1,405	1,350	0	55	3.9
1945	1,599	1,565	0	34	2.1
1946	1,825	1,782	0	43	2.4
1947	1,641	1,613	0	28	1.7
1948	1,742	1,725	0	17	0.9
1949	1,737	1,691	0	46	2.6
1950	1,863	1,837	0	26	1.3
Totals	26,830	25,449	46	1,335	4.9

A candidate is eligible for Part II after passing Part I and on successful completion of the medical course.

To be eligible for Part III a candidate must have passed the first two parts of the examination, received his degree and have satisfactorily completed an internship of one year in a hospital approved for such training by the Council on Medical Education and Hospitals of the American Medical Association, or have served in a laboratory acceptable to the board.

The figures shown in tables 43 and 44 cover details of examinations given in parts I and II in 1950 and also since 1922. The data presented represent examinations conducted rather than individuals examined since it includes candidates who fail and are reexamined during the same year and those who pass parts I and II in the same year.

In 1950, 3,678 examinations were given in Part I; 2,358 passed and 334, 9.0 per cent failed. There were 986 incomplete examinations given. In Part II, 1,863 examinations were held; 1,837 passed and 26, or 1.3 per cent, failed. Incomplete examinations are only rarely given in Part II. There were none given in 1950.

There have been 52,989 examinations given in Part I since 1922 and 26,830 in Part II. During this period 31,710 passed Part I and 25,449 passed Part II. In twenty-nine years there have been 5,114 failures in Part I, 9.6 per cent, and 1,335 in Part II, 4.9 per cent. The increasing recognition of the National Board's examinations by medical schools is reflected in the figures presented in these two tables, particularly since 1943. The greatest number of examinations were given in Part I in 1944 when medical schools were operating on an accelerated program. However, the number examined in Part II in 1950 exceeded the number so examined in 1943 by a few candidates.

TABLE 45.—*National Board Examinations in Part III, 1922-1950*

Year	Total Examinations	Passed	Failed	Percentage Failed
1922	22	22	0	0.0
1923	82	81	1	1.2
1924	126	120	6	4.8
1925	219	206	13	5.9
1926	255	243	12	4.7
1927	293	272	21	7.2
1928	322	306	16	5.0
1929	352	337	15	4.3
1930	420	401	19	4.5
1931	437	419	18	4.1
1932	550	522	28	5.1
1933	551	526	25	4.5
1934	567	548	19	3.4
1935	598	578	20	3.3
1936	576	547	29	5.0
1937	668	630	38	5.7
1938	706	682	24	3.4
1939	770	729	41	5.3
1940	792	771	21	2.7
1941	910	885	25	2.7
1942	1,054	1,041	13	1.2
1943	1,230	1,213	17	1.4
1944	1,168	1,146	22	1.8
1945	1,245	1,232	13	1.0
1946	1,634	1,613	21	1.2
1947	1,741	1,723	18	1.0
1948	1,715	1,700	15	0.9
1949	1,685	1,674	11	0.6
1950	1,752	1,736	16	0.9
Totals	22,440	21,903	537	2.3

Tests in Part III in 1950 totaled 1,752, including 1,736 successful examinations and 16, or 0.9 per cent failures. Results of examinations in this part in 29 years including 1950 are presented in table 45. During this period 22,440 were tested, of whom 21,903 were granted certificates. The percentage of failures in this final examination in 29 years was 2.3. Since 1915, 22,171 certificates have been awarded.

The 1,736 physicians certified as diplomates in 1950 represented 70 medical schools in the United States, five in Canada, one school no longer in operation and 11 foreign faculties of medicine. The names of the schools in the United States and Canada represented and the number of examinees from each are included in table 46.

The present schedule of fees is as follows: Part I, $20; Part II, $15, and Part III, $40, a total of $75. The full fee need not be paid at the time the examination is completed, since the board has established a loan fund which is available to all candidates taking the third part of the examination.

The figures thus far presented represent examinations given. The number of persons tested during any one year is recorded for the twenty-nine year period in table 47. The classification "Passed" or "Failed" in cases in which more than one examination has been taken in a given year are based on the results of the last examination during the year in question. Thus, if in 1950 a candidate passed Part I but at a subsequent examination in 1950 he failed Part II, he is computed in this tabulation as a failure. These figures reveal that there were 6,596 who took at least one of the tests of the National Board in 1950, as compared with 525 in 1922. The trend has been steadily upward. In 1950 the number of candidates was 103 greater than in the preceding year. In all, 91,225 persons were examined in one or more of the examinations annually in the 29 years shown, of whom 72,924 passed, 12,508 took incomplete examinations and 5,793 or 6.3 per cent, failed.

TABLE 46.—*Diplomates from Individual Medical Schools, 1950*

Medical College of Alabama	1	State Univ. of N. Y., Brooklyn	87
University of Arkansas	1	N. Y. Medical College	86
College of Medical Evangelists	29	New York University	102
Stanford University	4	State Univ. of N. Y., Syracuse	41
University of California	3	[illegible]	52
Univer. of Southern California	10	[illegible]	43
University of Colorado	6	[illegible]	52
Yale [illegible]	52	[illegible]	1
Geor[illegible]	69	[illegible]	4
Georg[illegible]	77	[illegible]	2
Howa[illegible]	12	[illegible]	8
Emor[illegible]	5	[illegible]	2
Medic[illegible]	1	[illegible] of Oregon	4
Stritch School of Med. of		*Hahnemann Medical College*	31
Loyola University	9	[illegible]	22
Northwestern University	33	[illegible]	29
Univ. Chicago School of Med.	8	[illegible]	35
University of Illinois	23	University of Pittsburgh	7
Chicago Medical School	6	Woman's Medical College	1
Indiana University	1	Medical College of S. C.	2
State Univ. of Iowa	24	Meharry Medical College	7
[illegible]	1	University of Tennessee	2
[illegible]	9	Vanderbilt University	
[illegible]	17	Baylor University	1
[illegible]	12	Southwestern Medical School	
[illegible]	14	University of Texas	5
[illegible]	51	*University of Utah*	4
[illegible]	122	[illegible]	32
[illegible]	84	[illegible]	9
[illegible]	26	[illegible]	1
[illegible]	2	[illegible]	18
[illegible]	12	[illegible]	2
[illegible]	9	McGill	17
[illegible]	11	Queen's	2
[illegible]	15	Univers[illegible]	1
[illegible]	10	Univers[illegible]	12
[illegible] Medical College	37	[illegible]	2
Columbia University	115	[illegible]	1
Cornell University	48	[illegible]	15
Total			1,736

Diplomates licensed to practice medicine on the basis of their credentials increased from 2 in 1917 to 2,395 in 1950 (table 48) and 19,925 have been so licensed since the National Board was formed. In the same period, however, 22,171 have received the certificate of the board.

The National Board has for the past year been making a study of some of the technics of the objective type of examination to determine if the objective type of question might be an improvement over the essay type of question which has been used chiefly in the board's written examinations. As an initial step the board is introducing a group of multiple choice questions as part of the examinations in the subject of medicine in the Part II tests in 1951 and in pharmacology and materia medica in the Part I examination. These examinations are a combination of the essay type of question and the short answer type of question, whereby two hours of the examination time will be allowed for answering three questions of the essay type, and an hour and a half for answering the objective part of the test.

TABLE 47.—*Parts I, II and III, Excluding Duplications, 1922-1950*

Year	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
1922	525	381	58	86	18.4
1923	775	594	79	102	14.7
1924	978	756	69	153	16.8
1925	1,167	915	50	202	18.1
1926	1,161	930	105	126	11.9
1927	1,248	947	142	159	14.4
1928	1,430	1,101	211	118	9.7
1929	1,723	1,280	319	124	8.8
1930	2,044	1,547	322	175	10.2
1931	2,218	1,632	410	176	9.7
1932	2,342	1,850	355	137	6.9
1933	2,277	1,806	280	191	9.6
1934	2,261	1,801	330	130	6.7
1935	2,368	1,831	408	129	6.6
1936	2,517	1,989	353	175	8.1
1937	2,735	2,151	397	187	8.0
1938	2,992	2,308	493	191	7.6
1939	3,221	2,476	443	302	10.9
1940	3,188	2,597	363	228	8.1
1941	3,318	2,749	332	237	7.9
1942	3,607	3,014	391	202	6.3
1943	4,514	3,671	606	237	6.1
1944	5,363	4,235	759	369	8.0
1945	5,614	4,468	886	260	5.5
1946	5,912	4,730	898	284	5.7
1947	6,249	4,965	1,002	282	5.3
1948	6,389	5,194	902	293	5.3
1949	6,493	5,376	880	237	4.2
1950	6,596	5,630	665	301	4.5
Totals	91,225	72,924	12,508	5,793	6.3

The constitution of the National Board of Medical Examiners provides for a membership of 33 persons, representing the federal services, the Federation of State Medical Boards of the United States, the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association and members elected at large. The president of the board is Howard T. Karsner, M.D., Cleveland; the medical secretary is G. S. Rodman, M.D.; the executive secretary and treasurer is Mr. E. S. Elwood, and the associate secretary, John P. Hubbard, M.D. The address of the board is 225 South 15th Street, Philadelphia 2.

TABLE 48.—*Licenses Granted on the Basis of National Board Certificates, 1950*

Alabama	6	New Hampshire	22
Arizona	7	New Jersey	101
Arkansas	3	*New Mexico*	12
California	229	New York	642
Colorado	20	North Carolina	33
Connecticut	133	North Dakota	2
Delaware	1	Ohio	75
District of Columbia	63	Oklahoma	5
Georgia	11	Oregon	17
Idaho	13	Pennsylvania	135
Illinois	104	Rhode Island	14
Indiana	26	South Carolina	6
Iowa	33	South Dakota	3
Kansas	14	Tennessee	14
Kentucky	12	Texas	63
Maine	32	Utah	11
Maryland	57	Vermont	20
Massachusetts	186	Virginia	28
Michigan	53	Washington	28
[illegible]	80	West Virginia	7
[illegible]	7	Wyoming	4
[illegible]	20	Alaska	5
[illegible]	7	Hawaii	10
[illegible]	4	Puerto Rico	17
Total			2,395

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COMMISSION ON FINANCING HIGHER EDUCATION OPPOSES FEDERAL AID TO MEDICAL EDUCATION

A new and authoritative voice spoke out in opposition to federal aid for medical education when the Commission on Financing Higher Education issued its statement on May 15, 1951. The commission, an independent body sponsored by the Association of American Universities and financed by grants from the Rockefeller Foundation and the Carnegie Corporation, is composed of the presidents of Johns Hopkins, Stanford, California Institute of Technology, Brown, Union and Missouri universities, the provost of Harvard University, the former acting president of Columbia and four civic leaders, including the chairman of the Board of Trustees of the University of Chicago.

While emphasizing strongly that more income for medical schools is imperative now, the commission, in discussing Senate Bill 337 now before the Senate and a similar bill which passed the Senate in 1949 but did not reach the floor of the House of Representatives, states:

> Legislation of this kind would introduce a new pattern for federal government financial assistance to higher education. Such a change needs much more thought than it has yet had. Our views are definite; we do not wish to see an expansion of direct federal financial subsidization of higher education in this country. If medical education should be directly subsidized, other educational programs might also claim such support. We believe such a course would be dangerous to the intellectual heritage of freedom and diversity which characterizes American higher education.
>
> Until it has been clearly demonstrated that other sources of support cannot finance medical education, we believe no such great and potentially far reaching innovation in federal financing should be undertaken.

The American Medical Association has been severely criticized in many quarters because it has opposed federal subsidy of the general operating costs of the medical schools on the grounds, first, that no adequate assurance has been offered that such support would not sooner or later impair or destroy the freedom of the medical schools, and, second, that the possibilities of securing adequate funds from private and local sources have not been fully explored. It is most heartening, therefore, that after mature consideration a group of responsible leaders in American higher education should have independently arrived at similar conclusions on this issue of fundamental importance to American education and American society.

The commission does not minimize the urgent need of the medical schools for immediate financial assistance. Its report points out that the financing of medical education has become a critical problem for universities with medical schools and that it should be a major concern of the people of the United States. The commission rejects as an unsound solution the suggestion that medical schools be separated from universities. It warns, however, that additional money must be found for the medical schools or such a course may be necessary to protect the other educational programs conducted by universities.

The commission suggests that aid to the medical schools and relief for their parent universities should come from several sources. It urges, first, that medical educators re-examine their programs with a view to finding opportunities for economizing. It recommends that the community services provided by medical schools be removed in large part from educational budgets and that the costs of hospital and medical care be met by patient charges, by local government appropriations, and by hospital and medical care insurance programs.

The commission's third recommendation is that agencies supporting medical research should bear most, if not all, of the costs, direct and indirect, of such research. At present, grants for research projects by private foundations, corporations, and the federal government leave sizable proportions of the cost of these projects to be defrayed from instructional budgets.

The report urges that states increase their appropriations for medical education and points to the subsidy of privately operated medical schools by the state of Pennsylvania as an example of state aid.

The fifth and last recommendation of the commission is that income from gifts should be increased. The commission points out that, if every member of the medical profession contributed an average of $100 a year to the support of medical schools, nearly *$18,000,000 in new* income would be provided. A strong plea is made for corporations to support not only medical research but also medical education. The commission cites the newly launched National Fund for Medical Education as providing appropriate machinery for such contributions.

The commission concludes in its review of these possible sources of additional money for the medical schools with this challenge: Individuals and corporation officials who object to government subsidy of medical education surely have the responsibility of producing other income. No discussion of this conclusion is necessary. It is a direct challenge to the nation.

MEDICAL SOCIETIES RALLY TO SUPPORT THE FOUNDATION

The American Medical Education Foundation was established as an instrument through which individual physicians and medical societies could contribute effectively to a nationwide program to raise substantial funds for medical education. The way in which state and county medical societies as well as individual physicians are availing themselves of this opportunity is most encouraging. Less than a month after the Foundation was established, the California Medical Association led the way for society giving with a donation of $100,000. California's generosity was quickly followed by gifts from the state societies of Virginia and West Virginia. At its annual meeting last week, The South Carolina Medical Association came vigorously to the support of the Foundation with a handsome gift of $10,000. To the Greenbrier Valley Medical Society of West Virginia goes the distinction of being the first county society to contribute to the fund.

Many other state and county societies have reported that they are now organizing to raise funds for the Foundation. Two weeks ago, the House of Delegates of the Medical Society of the State of New York voted to set up machinery for securing contributions from its members and set a goal of $250,000 for 1951. Ohio has been active from the start in urging its members to contribute to the Foundation and at present is leading all states in the number of individual contributions. The Denver County Society is carrying out an intensive campaign of talks before hospital staffs, letter-writing, telephone calls, and personal visits to its members to raise a substantial sum.

A number of other state and county societies have also reported that they have active programs under way and will be sending in their contributions shortly. An incomplete check of state and county medical journals reveals that well over 50 editorials and articles on the Foundation have been published. These various activities make it clear that across the nation the medical profession is mobilizing to show its intense interest in this venture and to insure the success of this new undertaking, which has already been hailed in many quarters as one of the most timely and constructive programs ever established by American medicine. The National Fund for Medical Education [1] has provided strong new forces from business, industry, labor, and agriculture who are pledged to assist in raising a large voluntary fund for medical education. Physicians, therefore, are not working alone to solve one of the nation's major health problems. Rather they are joined in a cooperative effort that President Conant of Harvard has described as "an example of the way a free people can face up to a problem."

Physicians who have not already given to the Foundation will find a convenient form on which they may make their contributions on pages 42 and 43 of the advertising section of this issue of THE JOURNAL.

MEDICAL LICENSURE

The 49th annual report on medical licensure prepared by the Council on Medical Education and Hospitals is published in this issue of THE JOURNAL. Data are presented concerning the medical examination and the licensure of physicians in the United States and its territories and outlying possessions for the year 1950. In addition, the report summarizes trends in licensure over many years. Current regulations pertaining to medical licensure are presented.

In 1950, 12,209 licenses to practice medicine and surgery were issued by the medical examining boards of the 48 states, the District of Columbia, Alaska, Guam, Hawaii, Puerto Rico, and the Virgin Islands. The 12,209 licenses issued last year represented 5,454 granted after written examination and 6,755 granted by reciprocity and endorsement of state licenses or the certificate of the National Board of Medical Examiners. Of the latter number, 2,395 of the recipients were diplomates of the National Board. The number of licenses issued annually continues to exceed the prewar years. In 1950, there was a slight increase over the preceding year.

Licentiates of 1950 who received their first license to practice medicine and surgery during the calender year and represent additions to the medical profession numbered 6,002. The number of physicians who died in 1950 was 3,794. Thus the physician population in the United States and its territories and outlying possessions was increased by 2,208.

Last year 722 failures were reported. Failures by graduates of approved medical schools in the United States amounted to 2.9%; by graduates of medical schools in Canada 8.5%, and by the graduates of approved medical schools no longer in operation 6.7%. The greatest percentage of failures were represented by graduates of three groups of schools—foreign faculties of medicine, unapproved medical schools and schools of osteopathy. In these groups, 55, 62.2 and 28%, respectively, failed.

The report also includes the preprofessional and professional educational requirements of each licensing board, the states requiring an internship for licensure, regulations pertaining to the registration of interns and residents, licensure on the basis of government credentials and the issuance of temporary permits.

A basic science certificate is a prerequisite for medical licensure in 18 states, the District of Columbia, and the Territory of Alaska. In the last calendar year, 5,956 certificates were issued. Of the 5,225 applicants tested by examination, 34.3% failed. Of the physicians, medical students and dentists examined, 12.1% failed. Of the osteopaths, chiropractors and unclassified candidates, 27.1, 76.4, and 51.1%, respectively, failed. Fifteen boards issued 2,526 certificates by reciprocity, endorsement, waiver, or exemption. The number so certified was 1,236 greater than in the previous year. Legislation creating a basic science board in Nevada was enacted in 1951.

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[1] Editorial: The National Fund for Medical Education and the American Medical Education Foundation, J. A. M. A. **146**: 258 (May 19) 1951.

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C[illegible]SURE OF FOREIGN-TRAINED PHYSICIANS

In February, 1950, the Council on Medical Education and Hospitals in collaboration with the Association of American Medical Colleges published its first listing of foreign medical schools whose graduates they recommended for consideration by medical institutions and medical organizations in the United States on the same basis as graduates of approved medical schools in the United States. This initial list included 38 schools. Six schools were added to the list in July, 1950, and five in y, 1951, bringing the total to 49.

ty-three licensing boards have reported that they opted this list. Eleven of these boards limit the ure of foreign-trained physicians to graduates of ols on the list; two boards specify that graduates er Jan. 1, 1940, are not eligible unless they have graduated from one of these schools, while one board will accept graduates of other schools if they possess the certificate of the National Board of Medical Examiners or the certificate of one of the American boards in the specialties. The remaining nine boards reported they accept the list but do not specify whether they also accept graduates of other schools. There are only 15 states now in which foreign-trained physicians are not eligible for licensure. During the past year, Georgia, Utah, and the Virgin Islands modified their regulations and will accept applications for licensure from foreign-trained physicians.

Of the 39 boards that accept foreign-trained physicians, 19 require full citizenship, 13 require the filing of first citizenship papers, while seven have no citizenship requirement. Two boards have indicated that they may waive the requirement of citizenship.

The licensing boards of four states have announced that they are willing to make special efforts to aid displaced physicians in following their profession until they meet the requirements for licensure.

A comparison with regulations of previous years indicates that the licensing boards are giving increasing consideration to the licensure of foreign-trained physicians. Last year the number of foreign medical graduates examined for medical licensure totaled 799. Applicants were tested in 30 states, the District of Columbia, Hawaii, Puerto Rico, and the Virgin Islands. The number who were successful in their test was 359; failures numbered 440, or 55%. There were 134 graduates of foreign medical schools licensed without examination in 22 states and Guam. The total number of foreign-trained physicians licensed in 1950 numbered 493. Of this number, 308 were licensed for the first time and thus represent additions to the physician population in the United States —267 were licensed after written examination and 41 by endorsement of credentials.

ALDRIN AND DIELDRIN POISONING

Because of the success that has been demonstrated in insect control by the use of chlorinated hydrocarbon insecticides, it may be expected that during the coming spring and summer season the use of these materials will be intensified and increased. The use of large quantiti of these insect poisons can be anticipated, particularly i the Southern and cotton-raising states. Aldrin and dieldrin are two of the newer substances that will probab be used in many areas. Since any new material m present a problem in diagnosis and treatment, it seem appropriate at this time to present what may be consi ered the present state of knowledge with regard to the two compounds.

Both these compounds are chlorinated hydrocarb and may be expected to produce in the organism typi symptoms of chlorinated hydrocarbon intoxicati Thus, their action will center primarily on the cen nervous system or in the gastrointestinal system w ingested.

Aldrin or dieldrin may be used either in the powd state for dusting or in oil as emulsifiable concentrat exposure is to the powder, the material may be abs by inhalation, through the skin or by swallowing. A dental poisoning from dust formulations is most like occur by ingestion. Concentrates or emulsions con xylene, kerosene or some other solvent that facilit absorption of aldrin and dieldrin. The solvents, th selves, are also capable of producing symptoms. irritation and other local symptoms of solvent poiso are of minor importance when compared with the d of systemic toxicity, which can result from cutan absorption of aldrin and dieldrin. Multiple dermal e sures are the most hazardous, with toxicity equal to of parathion for both compounds. The danger of a dental poisoning by inhalation is unknown. Intraven toxicity, which is possibly the closest measure of po tial danger from respiratory exposure, is three to times that of dichlorodiphenyltrichloroethane (DDT aldrin or dieldrin. As has been shown by DDT, th trinsic toxicity cannot always be used as an exact m ure of inhalation dangers, since the physicochemical acteristics of the insecticide and its various formula materially influence the degree to which the toxic absorbed in the respiratory passages. It is, therefor perative that the diagnosis of inhalation poisoni aldrin or dieldrin be supported by a definite his such exposure. Experimental evidence indica they have a greater chronic toxicity than an chlorinated hydrocarbon insecticides.

Since the physiologic action of aldrin and di be expected to resemble that of similar chlorin carbons, it is suggested that the following out in the observation of either actual or suspected cases of acute exposure to either of these substances. If the materials have been ingested, the first manifestation of such acute intoxication may be nausea and vomiting. It should be remembered, however, that acute poisoning may occur in the absence of pronounced gastrointestinal symptoms. The first evidence of intoxication may be peripheral nervous system involvement, and the patient should be watched closely for any evidence of hyperirritability. Although pulmonary edema has not been seen early in the cases so far reported, patients should be closely observed for such manifestations as labored breathing and rales. In addition to hyperirritabiilty, tonic and clonic convulsions can be expected to develop, which may or may not be separated by periods of depression. The available clinical data on these compounds indicate that significant depression between convulsive seizures may not be a consistent finding. Death can occur both during convulsions and during periods of depression and may be delayed two to 12 days or more.

Chronic intoxication will probably first be characterized by headache and general malaise. Sudden unexplained loss of weight may be significant. The loss of weight will almost surely be concomitant with loss of appetite. Although no authentic cases of chronic intoxication of humans have thus far been reported, animal experimentation has shown that both compounds possess a high order of chronic toxicity. A direct correlation between anorexia and weight loss has been observed. In chronic poisoning it has been suggested that there may be a latent period of several weeks between the last exposure and the development of symptoms; therefore, if chronic intoxication is suspected, it would be valuable to obtain a definite history of exposure over a rather long period of time.

If the skin has been contaminated with a chemical, the area should be washed thoroughly with soap and water. Although operators and formulators have been constantly warned to wash the skin immediately on contact with the material, varying degrees of carelessness can be expected in the use of these compounds. Contaminated clothing should be removed immediately and washed thoroughly.

If either of these materials has been ingested, the stomach should be washed out as quickly as possible; later, adequate quantities of magnesium sulfate should be given, in order that the ingested material may be purged rapidly. Close observation of the patient should be continued for at least 48 hours and preferably for 72 hours, in order that the first signs of any nervous system involvement may be noted. Tremors that gradually develop into episodes of convulsions separated by periods of depression may be suspected to be due to the insecticide. At the first suggestion of nervous system involvement, barbiturate therapy should be instituted with due consideration for their depressive properties. Pentobarbital sodium U.S.P., amobarbital sodium N.F., or other short-acting barbiturates may be employed. When immediate effects are desired, however, thiopental sodium U.S.P. may be employed if it is given slowly and in small amounts. Although barbiturates may often be given in excess of normal doses without serious danger to the patient, if convulsions have already occurred the patient should be watched carefully, lest he suffer more from the treatment than from the illness.

Dextrose U.S.P. may be administered intravenously, care being taken that not too much fluid is given parenterally, since pulmonary edema might result. In cases of either acute or chronic intoxication, high protein therapy may be advantageous, since liver damage may be produced by either type of poisoning, particularly by the latter. For this purpose the intravenous administration of amino acids is recommended. The use of morphine is definitely contraindicated. The administration of epinephrine or other sympathomimetic amines should be avoided.

Because even ingested material may result in the production of pulmonary edema, it is advisable that oxygen therapy be instituted as soon as practicable after the patient is first seen. It is desirable that oxygen be given even though pulmonary edema is not yet present. Early administration of oxygen will frequently eliminate the appearance of pulmonary edema or in any event will mitigate its seriousness if and when it does develop. The importance of oxygen administration cannot be overstressed, regardless of whether the material was absorbed by ingestion, through the skin or by inhalation.

In acute intoxications, kidney damage will probably be manifested by the presence of hemolyzed blood in the urine; therefore, the result of the benzidine test may be positive in the absence of red cells in the urine.

Although this clinical regimen is only preliminary, it appears to provide the best treatment available in the light of present information concerning these compounds.

THE PHYSICIAN'S STORY

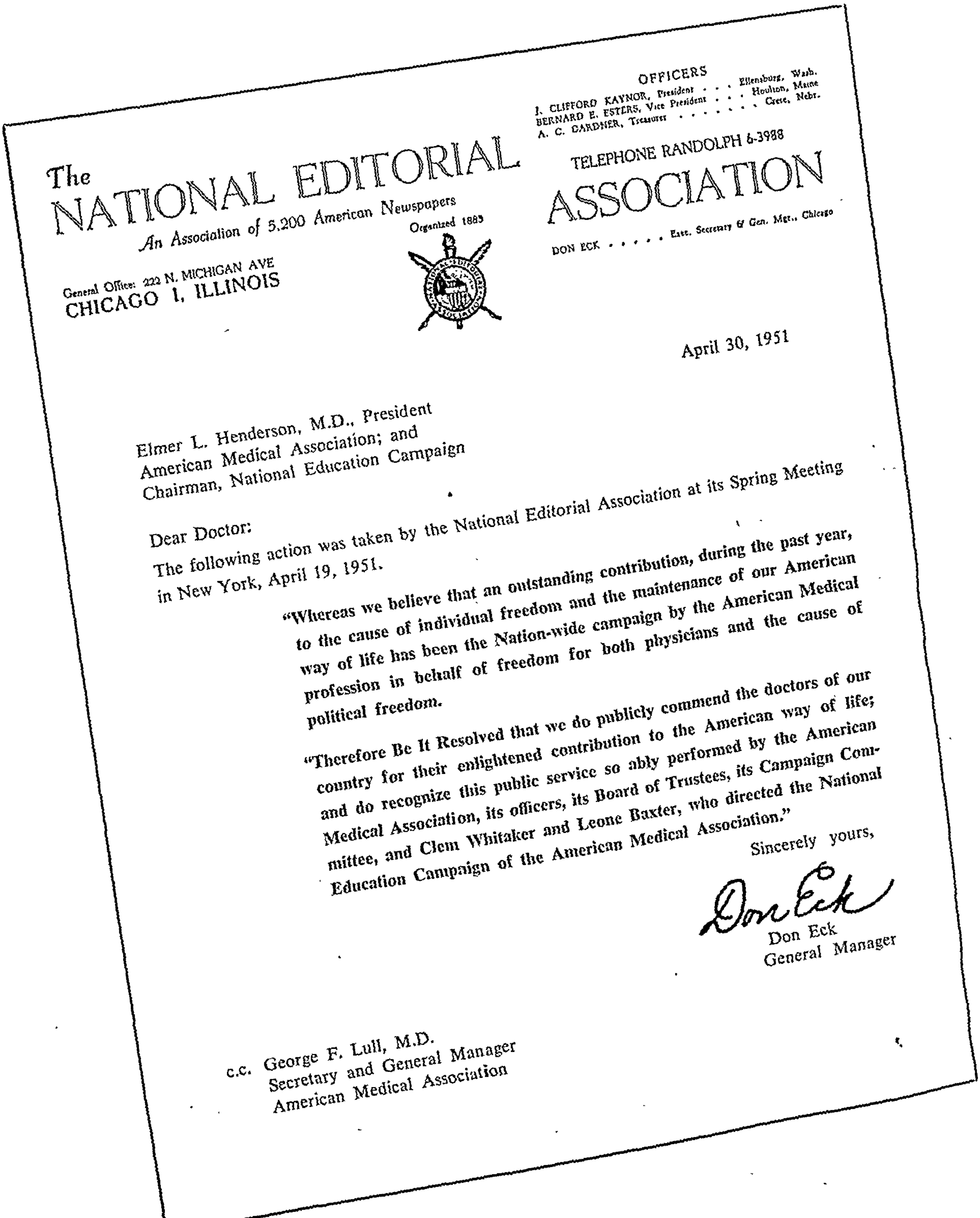
Health and the availability of medical service are always of interest to the people of this country. It is not surprising, then, to see the frequency with which mention of these subjects is made in the press. Sometimes the authors of such articles do not present truthfully, or without a misleading slant, the information that is available to those who honestly wish to seek and analyze without bias such data. Of the several articles that have appeared recently in national magazines, two will be of particular interest to physicians. Written by Paul deKruif and appearing in the May and June issues of *Reader's Digest,* they are entitled, respectively, "Your Doctor for a Friend" and "What About This 'Doctor Shortage?' " Without emotion, but in a friendly informative way, some truly revealing facts are made available. As a result, the public in general unquestionably will be better informed of some of medicine's problems and how the medical profession is attempting to solve them. DeKruif and *Reader's Digest* are to be commended for their reporting in these two stories.

A TRIBUTE TO DOCTORS FROM THE PRESS

In my inaugural address last June I paid a sincere tribute to the newspapers of the nation for their unswerving devotion to the cause of freedom. That devotion has been demonstrated again and again throughout the history of America; but never more dramatically than during the medical profession's crusade against government domination.

It is especially heartwarming, therefore, to learn that one of the great newspaper groups, The National Editorial Association, representing 5,200 non-metropolitan papers, has taken official action commending the doctors of America for their contribution to the American way of life. I have received, on behalf of all members of the American Medical Association, the following letter from Mr. Don Eck, General Manager of the NEA. I know I speak for all of you when I express my sincere appreciation of the fine tribute it contains.

ELMER L. HENDERSON, M.D.,
LOUISVILLE.



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DON ECK . . . . . . Exec. Secretary & Gen. Mgr., Chicago

April 30, 1951

Elmer L. Henderson, M.D., President
American Medical Association; and
Chairman, National Education Campaign

Dear Doctor:

The following action was taken by the National Editorial Association at its Spring Meeting in New York, April 19, 1951.

> **"Whereas we believe that an outstanding contribution, during the past year, to the cause of individual freedom and the maintenance of our American way of life has been the Nation-wide campaign by the American Medical profession in behalf of freedom for both physicians and the cause of political freedom.**
>
> **"Therefore Be It Resolved that we do publicly commend the doctors of our country for their enlightened contribution to the American way of life; and do recognize this public service so ably performed by the American Medical Association, its officers, its Board of Trustees, its Campaign Committee, and Clem Whitaker and Leone Baxter, who directed the National Education Campaign of the American Medical Association."**

Sincerely yours,

Don Eck

Don Eck
General Manager

c.c. George F. Lull, M.D.
Secretary and General Manager
American Medical Association

THE PRESIDENT'S PAGE

A FAREWELL MESSAGE

It hardly seems possible that this is the last message I shall send to you through The Journal as President of the American Medical Association. The months since I first took on this reportorial assignment for Editor Austin Smith, and the year since I took the oath of office in San Francisco, have been full, arduous, and infinitely rewarding. I only hope that I have been able to give in some small proportion to what I have received.

It is not my purpose here to report in any detail on the events and the accomplishments of the past year. They will be covered in full during the annual convention in Atlantic City next month. Rather, I would like to write in a more personal vein, about a few of the many, many things that have impressed me deeply during my tenure of office.

Serving as President of the greatest medical association in the world is in itself an honor that will always be cherished with humility and gratitude. But it is more. It is an opportunity—an opportunity to serve, an opportunity to observe. What service I may have rendered was given joyfully and with full awareness of the pressing needs of the day. It is the cumulative service of all physicians that has carried the American medical profession to its present high station and has given to this nation a new and vital leadership in affairs of citizenship.

I have been in a position peculiarly advantageous for the observation of such service—both within and outside of the profession—and what I have seen has been the most heartening experience of my life. It has renewed and implemented my faith in the ability of the individual to face his problems and meet them with wisdom and courage—to give of himself to his fellow man so that life may be richer and blessed with greater liberty and opportunity for all.

Last month I told about my experiences on a mission to the Far East. The loyalty and selfless devotion of our colleagues in uniform is magnificient. It is matched only by the bravery, the sacrifice and the patriotism of the men in combat. Just a few days ago I returned from another part of the world, where brave Americans are waging a different sort of battle against the aggressive enemy, communism: With Dr. R. L. Sensenich, one of my predecessors as President, I visited U. S. Air Force hospitals and dispensaries in France and Germany. The medical profession can be proud of its place in the military establishment, as the nation can be proud of its armed forces.

Preceding this tour, Dr. Sensenich, Dr. Louis H. Bauer, Chairman of the Board of Trustees, and I attended a meeting of the council of the World Medical Association in Geneva, and on the way home I stopped in Paris to speak before a meeting of the French chapter of the International College of Surgeons. These two meetings left me with a deep sense of admiration for the men and women of our profession who are devoting so much time and effort to world-wide improvement of medical standards and who are proving day by day that men of good will can work together across geographic, political and racial barriers.

One of the highlights of the Geneva conference was a joint session of the World Medical Association and the World Health Organization; the latter, as you know, is a United Nations subsidiary. The World Medical Association represents physicians, the WHO represents countries, but in the field of public health their purposes run parallel and they cooperate closely.

The work of these two great organizations, and the work of other groups, such as the International College of Surgeons, has assumed importance far beyond the field of medicine. By serving as forums for the exchange of ideas between men and women of vastly different backgrounds and environments, they initiate a realization of brotherhood that seems beyond the best efforts of diplomacy. Medicine's high role in world affairs is firmly rooted in the very nature of its own work. Illness knows no politics, no creed, no racial barriers. Neither do the healing arts.

Medicine's leadership in the service of humanity is worldwide, but it begins at home. In the United States, men of medicine have proved that the defense of their profession and of all professional freedom, all individual liberty is a cause they can and will espouse with vigor and determination. As I look back over the years of our crusade against government domination, I am supremely proud of my profession, of my fellow physicians. Once we stood almost alone. But not for long. We have presented the case for the American system of medicine honestly and factually; and the people have rallied to our side. We have gained good friends, strong friends—friends who will stand by us, and by whom we will stand firm, too.

This new entente is symbolized, I think, by three addresses, copies of which you have received by now. My successor as President of the American Medical Association, Dr. John W. Cline, gave one of the of the finest expositions of medicine's case against socialization that I have ever heard or read when he spoke before the New York City Town Hall last February. In a warm, human, forceful statement, Mr. William L. Hutcheson, general president of the United Brotherhood of Carpenters and Joiners of America, and first vice president of the American Federation of Labor, left no possible doubt that a large segment of our great labor force knows that "socialized medicine is no bargain!"

In another New York talk, Dr. Louis H. Bauer, appearing before the National Editorial Association, emphasized clearly and factually the close cooperation of two great professions, medicine and the press of the nation, in championing freedom. I have asked Dr. Austin Smith, the Editor, to reproduce on an adjoining page of this issue a splendid commendation, awarded on this occasion to doctors for their contribution to the American way of life, in their campaign to maintain an unfettered profession. To thousands of doctors who have worked so earnestly both for professional freedom and for high medical standards, this commendation is heartening evidence of the great esteem in which the medical profession is held by more than 90 per cent of American newspapers. .

Many others have spoken out impressively, too. I have just finished reading "What About This (Doctor Shortage)?" in the June *Reader's Digest.* For the second time in two months Paul de Kruif has written an article clearly showing what the medical profession is doing to meet the problems of the day. Both "What About This (Doctor Shortage)?" and "Your Doctor for a Friend"—in the May issue—are outstanding examples of fair, accurate reporting. De Kruif and the editors of *Readers' Digest* are to be complimented.

There will be many others, doctors and laymen, who will speak out impressively in the days and months to come. For this is a continuing task we physicians have assumed—a responsibility and an opportunity. In Dr. Cline, the American Medical Association will have a splendid, an inspiring leader. It will indeed be a privilege for all of us, whatever our role, to follow that leadership in keeping American medicine a strong and vital force in our nation's life.

Elmer L. Henderson, M.D.,
Louisville.

ORGANIZATION SECTION

REFERENCE COMMITTEES OF THE HOUSE OF DELEGATES

The Speaker of the House of Delegates of the American Medical Association has appointed delegates to serve on the reference committees of the House at the Atlantic City Session as follows:

SECTIONS AND SECTION WORK:

Willard A. Wright, *Chairman*, North Dakota
Percival Bailey, Section on Nervous and Mental Diseases
Harvey B. Matthews, Section on Obstetrics and Gynecology
Norman S. Moore, New York
Arthur A. Brindley, Ohio

RULES AND ORDER OF BUSINESS:

Walter E. Vest, *Chairman*, West Virginia
Dexter H. Witte, Wisconsin
John M. Porter, Kansas
William A. Hyland, Michigan
James P. Wall, Mississippi

REPORTS OF BOARD OF TRUSTEES AND SECRETARY:

Edgar V. Allen, *Chairman*, Section on Experimental Medicine and Therapeutics
Val H. Fuchs, Louisiana
Jacob W. Bird, Maryland
Charles G. Hayden, Massachusetts
Robert E. Schlueter, Missouri

MEDICAL EDUCATION AND HOSPITALS:

William Bates, *Chairman*, Pennsylvania
James S. Stevenson, Oklahoma
Joseph F. Londrigan, New Jersey
Henry S. Ruth, Section on Anesthesiology
Harlan A. English, Illinois

LEGISLATION AND PUBLIC RELATIONS:

Leo G. Christian, *Chairman*, Michigan
Hugh H. Hussey Jr., District of Columbia
J. Paul Jones, Alabama
Denver M. Vickers, New York
Raymond M. McKeown, Oregon

HYGIENE AND PUBLIC HEALTH:

Louis M. Orr II, *Chairman*, Florida
W. Palmer Dearing, United States Public Health Service
Herbert H. Bauckus, New York
Stanley H. Osborn, Section on Preventive and Industrial Medicine and Public Health
Hugh P. Smith, South Carolina

AMENDMENTS TO CONSTITUTION AND BY-LAWS:

Robertson Ward, *Chairman*, California
Jesse D. Hamer, Arizona
Everett P. Coleman, Illinois
George Braunlich, Iowa
J. B. Lukins, Kentucky

REPORTS OF OFFICERS:

Britton E. Pickett Sr., *Chairman*, Texas
George M. Fister, Utah
John M. Emmett, Virginia
Harold F. R. Brown, New York
William F. Costello, New Jersey

CREDENTIALS:

H. Russell Brown, *Chairman*, South Dakota
Karl S. J. Hohlen, Nebraska
Charles L. Farrell, Rhode Island
Charles T. Stone Sr., Section on Internal Medicine
Robert B. Homan Jr., Texas

INDUSTRIAL MEDICINE:

Earle M. Chapman, *Chairman*, Massachusetts
Ralph A. Johnson, Michigan
Bertie O. Edwards, North Carolina
Carlton E. Wertz, New York
James Z. Appel, Pennsylvania

EXECUTIVE SESSION:

Homer G. Hamer, *Chairman*, Indiana
Howard K. Petry, Pennsylvania
Donald Cass, California
Willis I. Lewis, Illinois
Charles J. Kickham, Massachusetts

INSURANCE AND MEDICAL SERVICE:

William R. Brooksher, *Chairman*, Arkansas
Maurice J. Dattelbaum, New York
John W. Green, California
William H. Halley, Colorado
Benjamin H. Minchew, Georgia

MISCELLANEOUS BUSINESS:

Andrew A. Eggston, *Chairman*, New York
Thomas J. Danaher, Connecticut
Alfred S. Hartwell, Hawaii
Hoyt B. Woolley, Idaho
Clifford C. Sherburne, Ohio

TELLERS:

George S. Klump, *Chairman*, Pennsylvania
Eugene F. Hoffman, California
Robert H. Hayes, Illinois
Deering G. Smith, New Hampshire
Carl H. Gellenthien, New Mexico

SERGEANTS AT ARMS:

Hollis E. Johnson, *Chief*, Section on Diseases of the Chest
John K. Glen, Texas
Charles M. Hamilton, Tennessee

FEDERAL MEDICAL LEGISLATION

United States Medical Academy

Representative Heller of New York introduced H. R. 3931, which would create a medical training school for the armed services and the Public Health Service to be known as the United States Medical Academy. The President would select the location of the school on recommendation of the secretary of defense and the surgeon general of the Public Health Service.

Students would be nominated for admission as follows: Four students for each senator, representative, delegate in Congress and resident commissioner from Puerto Rico; six for the District of Columbia, and two by the governor of the Canal Zone. Candidates for admission are to be in the age bracket 20 to 25, graduates of a college or university, or possessing the qualifications for entrance to a medical school of the state of which they are residents. The course of study would be such as prescribed for the study of medicine by the American Medical Association. On graduation, students would be commissioned and required to serve for five years in a branch of the armed services or in the PHS or any other federal service.

The superintendent of the academy (he need not be a physician) would be appointed by the President and confirmed by the Senate for a term of 10 years. The secretary of defense and the surgeon general of the PHS, on the recommendations of the superintendent, would jointly fix the number of instructors, hours of instruction, and titles by which the several departments of instruction and offices of professor established in the academy would be known and would fix the compensation of all employees under the provisions of the Classification Act.

A board of visitors would be appointed each year, to be made up as follows: chairmen of the Committees on Armed Services of the Senate and House; Chairman of the Committee on Labor and Public Welfare of the Senate; Chairman of the Committee on Interstate and Foreign Commerce of the House; two other members of the Senate to be appointed by the Vice President, at least one of whom is a member of the Appropriations Committee; two other members of the House to be appointed by the Speaker, one of whom is a member of the Appropriations Committee, and five persons to be appointed by the President, three of whom, at least, shall be outstanding in the fields of medicine or medical research. The board would inquire into the curriculum, instruction, physical equipment, fiscal affairs, academic methods, and other matters relating to the academy. Within 60 days after an annual meeting, the board (which is purely advisory) would submit a written report containing recommendations to the President. The secretary of defense and surgeon general of the PHS would prescribe jointly such rules and regulations for the management and administration of the academy as they find necessary. This bill is identical with H. R. 9157 of the last Congress, also introduced by Representative Heller.

VA Presumption of Service-Connected Disability

Representative Jones of Alabama introduced H. R. 3996, which would amend the Veterans Regulations to provide that malignant tumors developing a 10% or more degree of disability within five years after separation from active service shall be presumed to be service-connected.

STATE LEGISLATION

Alabama

Bills Introduced.—H. 25 and S. 79 propose the creation of a ***state board of ophthalmic dispensers*** to have exclusive jurisdiction over the profession of dispensing opticians. S. 100, to amend the medical practice act, proposes certain conditions under which the board of medical examiners may establish **reciprocal relations** with examining boards in other states. S. 101, proposes the inauguration of a ***scholarship*** program to promote the education of nurses. S. 102, proposes the inauguration of a scholarship program to promote the education of Negro nurses.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

MEDICAL NEWS

ARIZONA

State Medical Election.—The Arizona Medical Association at its meeting April 29 through May 2 installed Dr. Harry T. Southworth, Prescott, as president. Other officers elected included Dr. Edward M. Hayden, Tucson, vice president; Dr. Thomas H. Bate, Phoenix, president-elect; Dr. Frank J. Milloy, Phoenix, secretary; Dr. Clarence E. Yount Jr., Prescott, treasurer, and Dr. Harry E. Thompson, Tucson, speaker of the house of delegates. Dr. Jesse D. Hamer, Phoenix, was chosen as a delegate to the American Medical Association for a two-year term, with Drs. Preston T. Brown, Phoenix, and Harold W. Kohl, Tucson, as successive year alternates.

ARKANSAS

Doctor's Day.—The Arkansas legislature has established March 30 of each year as Doctor's Day in the state. This is believed to be the first action by a state legislature to make Doctor's Day official. The law requests the governor to issue annually a proclamation calling on the citizens of Arkansas to remember physicians that day. The woman's auxiliary to the Arkansas Medical Society was interested in effecting the legislation.

CALIFORNIA

San Francisco Society Honors Dr. Cline.—More than 500 physicians, civic leaders, and public officials honored Dr. John W. Cline, President-Elect of the American Medical Association, at a testimonial banquet in San Francisco given by the San Francisco Medical Society April 8. Dr. Cline is a past president of the society and a long-time member. From the national medical figures who could not attend came scores of letters and telegrams expressing regret and extending congratulations to Dr. Cline. Individual society members, hospitals, and organizations joined in extending congratulatory letters. The mayor of the City and County of San Francisco, the chief administrative officer, the chamber of commerce, representatives of public health and Stanford University, state medical and dental societies, the press, and others were represented. Dr. Cline addressed the group on "California Physicians' Service."

CONNECTICUT

State Medical Election.—Dr. F. Brae Rafferty, Willimantic, assumed office as president of the Connecticut State Medical Society at the society's annual meeting May 1 to 3 in Stratford. Dr. Edward J. Whalen, Hartford, was named president-elect; Dr. Oliver L. Stringfield, Stamford, first vice president, and Dr. Robert R. Agnew, Norwich, second vice president. Dr. Creighton Barker, New Haven, was re-elected executive secretary; Dr. Cole B. Gibson, Meriden, treasurer; Dr. Stanley B. Weld, Hartford, editor, *Connecticut State Medical Journal*, and Dr. Herbert Thoms, New Haven, literary editor. The meeting was the largest ever sponsored by the society and was attended by more than 1,000 physicians and guests.

Hospital Affiliates With Medical Center.—Affiliation of the newly-completed Greenwich Hospital in Greenwich, Conn., with the New York University-Bellevue Medical Center in New York City has been announced. Formally dedicated May 5, the hospital was constructed at a cost of $4,750,000, including the remodeling of buildings formerly in use. The hospital will have the advantages of a working relationship with a university medical center under the regional hospital plan of the Division of Affiliated and Regional Hospitals. This plan is a part of the teaching program of the medical center. The six-story building has 211 beds. Laboratories, facilities for surgery and service installations are large enough so that, as the community grows, the hospital's capacity may be increased to as many as 400 beds merely by extending the wings for patients.

ILLINOIS

First State-Owned Tuberculosis Hospital.—Illinois' first state-owned tuberculosis sanitarium, located at Mt. Vernon, was dedicated and open to public inspection May 13. The sanitarium has facilities for 100 patients who may be admitted from any part of the state. It will be operated by the state department of public health, but the cost will be met by a local agency with the responsibility for the care and treatment of tuberculous patients, as provided by law. Other elements of the tuberculosis eradication program of the state include the operation of free chest x-ray units and aid to local tuberculosis sanitariums throughout Illinois. Illinois has had a steady decline in tuberculosis incidence since 1900, with deaths from this disease falling from more than 7,000 to about 2,000 in the half century. Dr. Roland R. Cross, state health director, was master of ceremonies at the dedication program, which included remarks by Gov. Adlai E. Stevenson; Dr. Harold M. Graning, regional director of the U. S. Public Health Service, Chicago; Dr. Kenneth G. Bulley, Aurora, president of the Illinois Tuberculosis Association; Dr. Andy Hall of Mt. Vernon, former state director of public health; Mrs. Laura Lunde, co-chairman, State-wide Tuberculosis Eradication Committee, and Dr. Edward A. Piszcek, chairman of the board of public health advisors to the Illinois Department of Public Health.

Chicago

Society News.—At the annual meeting of the Chicago Urological Society April 26 the following officers were elected: Dr. Frederick Lloyd, president; Dr. Jacob S. Grove, vice president, and Dr. Joseph H. Kiefer, secretary-treasurer.

Dr. O'Brien Succeeds Dr. Volini.—Dr. George F. O'Brien was appointed May 7 chairman of the department of medicine of the Stritch School of Medicine, Loyola University. Dr. O'Brien, who was formerly associate clinical professor of the same department, succeeds the late Dr. Italo Volini. Dr. O'Brien received his M.D. degree from Rush Medical College, Chicago, in 1927. He served in World Wars I and II, attaining the rank of colonel in the medical corps during the latter conflict. He was chief of medicine for General Hospital 297 (Cook County Hospital Unit), which saw two years' service in Europe.

MASSACHUSETTS

Muscle Research.—Dr. Albert Szent Gyorgyi, biochemist and Nobel prize winner in 1937, has received a grant-in-aid for a research program in the chemistry of muscle from Armour and Company. He and seven assistants at the Marine Biological Laboratories in Woods Hole, Mass., will try to establish the fundamentals of muscle chemistry, physiology and function and thus help in the control of some diseases involving muscle failure.

Shattuck Award.—At the April 26 meeting of the Massachusetts Public Health Association Dr. Henry Dexter Chadwick, Waltham, received the Lemuel Shattuck Award established by the association in 1949. Dr. Chadwick was cited for his "ten year program for the early detection of tuberculosis in children," which came to be known as the Chadwick Clinics. Dr. Chadwick is a former Massachusetts commissioner of public health and former president of the Massachusetts Tuberculosis League, the National Tuberculosis Association, and the Massachusetts Public Health Association.

MICHIGAN

Clinic Day at Bon Secours Hospital.—Members of the staff of Bon Secours Hospital, Grosse Point, will present an all-day program beginning at 10 a. m. June 5 in the assembly hall of the new building. A total of 17 papers will be given. Dr. Ellerton G. Aldrich will serve as moderator at the morning session, Dr. Galen B. Ohmart at the afternoon session, and Dr. Lyle E. Heavner at the evening session.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Dr. Redl Named to Franklin Memorial Chair.—Fritz Redl, Ph.D., professor in the school of social work at Wayne University, Detroit, has been named the Leo M. Franklin Memorial Professor in Human Relations at Wayne for the university year beginning in September. The memorial professorship carries an annual stipend of $1,000 over and above the professor's salary. Under the plan Wayne annually presents a lecture series known as the Leo M. Franklin Memorial Lectures in Human Relations. Dr. Redl is the author of books and of encyclopedia articles pertaining to his field.

MONTANA

Medical-Surgical Conference.—The Cascade County Medical Society is sponsoring the second annual Great Falls Medical-Surgical Conference June 25-26 at the Meadow Lark Country Club in Great Falls. Speakers include Drs. Stanley O. Hoerr, Cleveland Clinic; John L. Parks, professor of obstetrics and gynecology, George Washington University School of Medicine, Washington, D. C.; Ralph V. Platou, head of the department of pediatrics, Tulane University of Louisiana School of Medicine, New Orleans; Stewart G. Wolf Jr., associate professor of clinical medicine, Cornell University Medical College, New York, and Dawson A. Dowell, associate professor of radiology, Creighton University School of Medicine, Omaha.

NEW JERSEY

Personal.—Dr. May Sherman, Greystone Park, joined the medical staff of Winthrop-Stearns Inc., New York, effective March 26, as associate medical director. Dr. Sherman was pathologist at the New Jersey State and Manhattan State hospitals before joining the firm.

Study of the Chronically Ill.—A grant of $60,000 has been made by the Commonwealth Fund to the Hunterdon County Medical Center for a study of incidence of disabling chronic illness in he rural population. The study will be based on plans developed by the Commission on Chronic Illness, and field work will be carried out with consultation from the commission. The U. S. Public Health Service has made a preliminary grant of $10,000 o assist in planning a similar survey in an urban population. Prevalence of illness by disease will be measured, and the study will seek information on different types of care needed: hospital, home care, rehabilitation and other community services.

NEW YORK

Hospital Psychiatric Unit.—At its 85th anniversary April 6 St. Barnabas Hospital for Chronic Diseases completed plans for a $40,000 psychiatric unit expected to be ready by fall. It will care for chronic patients who after admission develop psychiatric conditions. The unit will include nine single rooms with flexible features that will permit its enlargement by ten more beds. Specialized facilities of the psychiatric hospital will be provided. The unit will be under the supervision of attending neuropsychiatrists from Columbia-Presbyterian Medical Center headed by Dr. Earl C. Chester and Dr. John M. McKinney, with Dr. Glen T. Smith, clinical director at St. Barnabas, in charge of medical treatment.

Community Nutrition Institute.—The fifth Community Nutrition Institute sponsored by Syracuse University and the New York State Department of Health will be held at the university June 18-23. Out-of-state speakers during the first week's program on special problems include:

Lionel B. Pett, Ottawa, Ont., Canada, Nutrition Programs in Canada.
James A. Reyniers, Notre Dame, Ind., Germ-free Life Studies.
Edward C. Reifenstein Jr., Oklahoma City, Calcium Metabolism.
James B. Allison, Ph.D., New Brunswick, N. J., Nitrogen Balance.

In the second week discussion will be given to the nutritional problems that are intensified in times of emergency. Out-of-state speakers will be:

Grace A. Goldsmith, New Orleans, Discussion of Recommended Emergency Allowances.
Jean Mayer, Boston, The World's Food Needs.

The approximate cost for the two-week institute including board, room, and all fees (except a $10 matriculation fee for those desiring graduate credit) is $120. Application for admission should be made to Anne Bourquin, College of Home Economics, Syracuse University, Syracuse 10.

New York City

Personal.—Dr. Samuel J. Prigal, assistant professor of medicine, New York Medical College, Flower-Fifth Avenue Hospital, will participate in the symposium on aerosol therapy June 1 and 2 in Turin, Italy, under the auspices of Minerva and Italian medical societies.

Heart Disease Research Grant.—Roosevelt Hospital has received a grant of $6,000 for research in the field of cardiovascular disease. The donor asked that the gift be anonymous. Dr. Arthur J. Antenucci, a member of the medical board of the hospital, is head of the project, which deals specifically with circulatory dynamics in cases of acute coronary artery thrombosis.

Union Opens Health Center.—The New York joint board of the Amalgamated Clothing Workers, C.I.O., on April 15 dedicated its 1 million dollar, six-story health center at 16 E. Sixteenth St., which will provide medical services for 40,000 members in the metropolitan district. Funds to maintain and operate it will be paid directly by the workers themselves by $10 additional dues during the first year. The center will also carry on a program for research in the fields of cardiovascular diseases and arthritis, for which the joint board has appropriated $250,000. Funds for the establishment of the center came from the New York Clothing Manufacturers Exchange and from the union. A staff of 75 doctors, 25 technicians, nurses, pharmacists, social workers, and others will take care of an estimated 750 patients per week, all by appointment. Services available include health examinations, laboratory screening tests, a pharmacy where drugs will be sold at cost, physical therapy, minor surgery and urology, x-ray and photofluoroscopy analysis, and deep therapy. Dr. Morris A. Brand, associate medical director of the Health Insurance Plan of Greater New York, is medical director. The research program will be conducted by Dr. Ernst P. Boas. Members of the medical advisory board are: Dr. Boas, chairman, Dr. Martin Steinberg, Dr. John J. Wittmer, Dr. Leonard J. Goldwater, and Dr. Mario F. Tagliagambe.

NORTH CAROLINA

Medical School to Celebrate Tenth Anniversary.—During commencement exercises scheduled for June 10-11 the tenth anniversary of the establishment of the Bowman Gray School will be observed. Special tribute will be paid at that time to members of the Gray family who made the school possible through their gifts. Harold W. Tribble, LL.D., president of Wake Forest College, will deliver the commencement address and Mark Depp, the baccalaureate sermon.

Personals.—Dr. Frank Ray Lock, professor of obstetrics and gynecology, has succeeded Dr. Coy C. Carpenter as medical director of North Carolina Baptist Hospital, Winston-Salem. Dr. Carpenter asked to be relieved of duties in the capacity in which he has served for the past ten years to devote more of his efforts to his duties as dean of the medical school and professor of pathology.——Dr. Parker R. Beamer, professor of microbiology and immunology at Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, received the Moore County Award during the annual meeting of the Medical Society of the State of North Carolina in Pinehurst. The award goes to the author of the paper judged to be best of those presented in the meeting of the preceding year. Dr. Beamer's subject was, "Studies on Experimental Leptospirosis (Weil's Disease)."——Dr. C. Hampton Mauzy, associate professor of obstetrics and gynecology at Bowman-Gray School of Medicine, was chosen president-elect of the North Carolina Obstetrics and Gynecology Society at a recent meeting at Mid-Pines.

OHIO

Ohio Medical History.—A program devoted to the medical history of Ohio was given at the annual meeting of the committee on medical history and archives of the Ohio State Archaeological and Historical Society at the Ohio State Museum in Columbus April 28. Titles of papers presented are "Indian Materia Medica and Therapy in the Northwest Territory," "Medical Men of the Ohio Indian Wars, 1790-1796," "Medicinal Springs and Spas of Ohio," "Pathology in the Medical College of Columbus," "Development of the Teaching of Physiology in Ohio," and "An Unusual Physician's Notice."

PENNSYLVANIA

Personal.—Dr. Wallace L. Davidson, who has been in private practice in Pottstown, has been appointed industrial physician for the Glenolden and West Point, Pa., plants of Sharp & Dohme, Incorporated.

Tuberculosis and Health Association Home.—The Erie County Health and Tuberculosis Association has established headquarters in the Burton Homestead, a 100 year old landmark in Erie. The white frame building was known a century ago as the Mineral Springs Resort, where Erie poineers went to "take the water." The homestead also provides space for several health agencies; the Erie unit of the American Cancer Society has already established quarters there.

Philadelphia

University Alumni Meeting.—The 40th reunion of the 1911 medical class of the University of Pennsylvania will be held June 15 at the Radnor Hunt Club, 15 miles from Philadelphia.

Strittmatter Award to Dr. Brown.—Dr. Charles L. Brown, dean of the Hahnemann Medical College, was the recipient of the Strittmatter Award for 1951 from the Philadelphia County Medical Society at its meeting April 11. This award, consisting of a gold medal and a plaque, is presented each year to the "physician who has made the most valuable contribution to the healing arts or who has contributed extra-ordinary meritorious service to the medical profession." The subject of Dr. Brown's address of acceptance was "The Impact of Medical Education and Research on the Practice of Medicine."

SOUTH DAKOTA

State Medical Meeting.—The South Dakota Medical Association will hold its annual meeting in Aberdeen June 4-6 under the presidency of Dr. Louis J. Pankow, Sioux Falls. Speakers include:

Philip Thorek, Chicago, Acute Abdomen and Intestinal Obstruction.
Edith L. Potter, Chicago, Congenital Abnormalities of the Urinary Tract in Children.
Fremont Chandler, New York, Some Interesting Highlights in Orthopaedic Practice.
Robert E. Priest, Minneapolis, Tracheotomy and Bulbar Poliomyelitis.
Carlo S. Scuderi, Chicago, Backache, Its Diagnosis and Treatment from the Standpoint of the General Practitioner.
C. Allen Good, Rochester, Minn., Bronchogenic Carcinomas Stimulating Benign Lesions.
William J. Baker, Chicago, Carcinoma of the Prostate Gland, and Renal Tumor.
John H. Randall, Iowa City, Conduct of Abnormal Labor, and Malignancy of the Female Genital Tract.
Archibald L. Hoyne, Chicago, Eruptive Diseases of a Contagious Nature.
Raymond D. Pruitt, Rochester, Minn., Medical Care of Cardiac Patients Undergoing Surgery.
Maurice H. Stauffer, Rochester, Minn., Liver Biopsy.
Reynold A. Jensen, Minneapolis, Anxiety in Pediatrics.
Carl W. Laymon, Minneapolis, Malignancy of the Skin.
Mr. Mac. F. Cahal, Kansas City, Mo., The Academy of General Practice.
William H. Masters, St. Louis, The Rationale and Technique of Endocrine Replacement in the Aged Female, and a Preliminary Report.

VIRGINIA

Tuberculosis Foundation.—The Tuberculosis Foundation of Virginia received $200,000 from the estate of Mrs. Jennie W. Brothers of Fayetteville. It will be known as the Pattie Mae Fund and will be used to care for indigent tuberculosis patients. The trust fund was set up 28 years ago.

University Alumni Speakers.—Alumni speakers at the annual meeting of the University of Virginia Medical Alumni Association, Charlottesville, June 8 will be Dr. John S. Lawrence, professor of internal medicine, University of California School of Medicine, Los Angeles, and Rear Adm. H. Lamont Pugh, surgeon general of the U. S. Navy. Dr. Lawrence will address the meeting's morning session on "Physiology of White Blood Cells," and Admiral Pugh will speak at the annual dinner.

Outbreak of Vincent's Angina.—Dr. Albert S. McCown, Virginia Department of Health, has reported a high incidence of Vincent's angina in Tazewell County. More than 100 persons of all ages have been seen in a local hospital. The main complaint was an acute sore throat, often accompanied by a slight rise in temperature. A few instances of multiple family cases were observed, but close personal contact with other cases was usually absent. A similar outbreak occurred one year ago.

WEST VIRGINIA

New Mental Hygiene Service.—In March the mental hygiene clinic jointly sponsored by the state department of health and West Virginia State College, Institute, began an extension mental health service in McDowell County. The clinic team for this service includes Dr. Simon O. Johnson, psychiatrist and superintendent of Lakin State Hospital; Herman G. Canady, Ph.D., clinical pathologist, and Mrs. Ida B. Chamberlain, psychiatric social worker. The clinic was assisted by the services of guidance teachers and a public health nurse who screened the patients and supplied information for the clinic team. The McDowell County Health Department, through Dr. James A. Bennett, Algoma, director, offered its office facilities. Many more referrals were received than could be accepted for the first demonstration session. The responses and inquiries from parents, teachers and other community leaders revealed an enthusiasm that indicates a growing interest in permanent clinical services. While in McDowell County the clinic team assisted local citizens in establishing the McDowell County Mental Hygiene Society.

GENERAL

Physical Therapy Meeting.—The annual conference of the American Physical Therapy Association will be held at the Hotel Colorado, Glenwood Springs, Colo., June 17 to 22. Lectures and clinical workshops will be devoted to the following subjects: lower extremity amputees, chest disabilities, physical therapy in neuropsychiatric conditions, electrical stimulation, and testing.

Annual Meeting on Tuberculosis.—The American Academy of Tuberculosis Physicians will hold its annual session at the Seaside Hotel in Atlantic City, N. J., June 9 under the presidency of Dr. Jacob W. Cutler, Philadelphia. Subjects under discussion include: open pneumonolysis, the intermittent streptomycin treatment of tuberculosis, hematological and immunological observations in experimental histoplasmosis, benemid as an adjunct to para-amino-salicylic acid therapy, and BCG and the armed forces.

Institute for Tuberculosis Workers.—The National Tuberculosis Association will hold an institute for professional workers in state and local tuberculosis associations June 4 to 15 at Haven Hill Lodge, Milford, Mich. Association workers having from 10 months' to three years' experience are eligible, and applications may be obtained through state association offices. Topics for discussion will include the history of tuberculosis control, fact-finding, case-finding, health education, public relations, Christmas seal sale, problems of patients and their families, and veterans' services. The sessions will also cover the organization of a tuberculosis association, program and budget development, accounting for funds, personnel practices, and state and local relationships.

Friends Medical Society Formed.—The Friends Medical Society, established to give voice and expression to the medical implications of traditional Quaker principles, was formed Nov. 12, 1950. The group is a non-profit organization, open to physicians and medical students of both sexes. Although it has been initiated by a group of Quaker physicians affiliation with this society is open to non-Quakers as well. Membership does not imply any payment of dues, as the group will rely upon voluntary contributions for its support. Members of the advisory committee are: Dr. Joseph Stokes Jr., Children's Hospital, Philadelphia; Dr. Charles Perera, Columbia Presbyterian Medical Center, New York, and Dr. J. Huston Westover, May Imogene Bassett Memorial Hospital, Cooperstown, N. Y. Dr. Martin G. Vorhaus is chairman of the organization committee, 1130 Park Ave., New York 28.

Communicable Diseases Outside the United States.—According to a U. S. Public Health Service release May 10, 18 cases of smallpox were reported on May 1 in Tilburg, Netherlands. Another case due to close contact with a patient in Tilburg has been reported in Utrecht. Between Jan. 27 and Mar. 21, 53 cases of jungle yellow fever with 19 deaths were reported in San Domingo de los Colorados, Ecuador. On Mar. 21 a fatal case was reported in the province of Esmeraldas. A total of 12,251 persons have been vaccinated since January in the two areas. An outbreak of typhoid fever in a town 35 miles south of Matamoros, Mexico, which is situated across the river from Brownsville, Texas, has been reported, but most recent information indicates that only two cases have been confirmed. It is also reported that 460 persons were vaccinated in an effort to control the outbreak. Typhoid fever, which was previously reported in Malaga, Spain, still exists despite sanitary measures taken by local authorities. The disease is also prevalent in Madrid, and in the Province of Valencia it is reported to be confined mainly to the rice-growing areas. Cholera and smallpox continue to be prevalent in India.

Gordon Research Conferences.—These conferences, sponsored by the American Association for the Advancement of Science, formerly known as the Gibson Island Research Conferences, will be held from June 18-August 31 at Colby Junior College, New London, N. H. Meetings are to be held in the morning and in the evening, Monday through Friday, with the exception of Friday evening. The purpose of the program is to bring experts up to date as to the latest developments, analyze the significance of these developments and to provoke suggestions as to underlying theories and profitable methods of approach for making new progress. It is an established rule that all information presented is not to be used without specific authorization of the individual making the contribution, whether in formal presentation or in discussion. No publications are prepared as emanating from the conferences. Accomodations are available for a limited number of women to attend each conference, also for wives who wish to accompany their husbands. Rooms are available at several inns and hotels in the area if reservations are made in advance. Requests for information should be addressed to W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston. From June 15 to September 1, mail should be addressed to Colby Junior College, New London, N. H.

American Rheumatism Association.—This association will hold its annual meeting June 8-9 at the Hotel Dennis, Atlantic City, N. J., under the presidency of Dr. Otto Stein Brocker, New York. Invited speakers include:

Konrad Dobriner, New York, Adrenal Function and Steroid Hormone Metabolism in Health and in Disease.
Burton L. Baker, Ph.D., Ann Arbor, Mich., Observations on Local Action of Adreno-Cortical Steroids.

On Saturday Dr. Philip S. Hench, Rochester, Minn., will serve as moderator of a panel discussion on difficulties and complications in the therapeutic use of ACTH and adrenocortical steroids in the rheumatic diseases. Members of the panel will be Drs. Edward W. Boland, Los Angeles; W. Paul Holbrook, Tucson, Ariz.; Charles A. Ragan Jr., New York, and William D. Robinson, Ann Arbor, Mich. Other subjects to be presented include: significant remissions in rheumatic diseases with high dosage cortisone therapy, the problems of prolonged cortisone treatment for rheumatoid arthritis—further experiences, the clinical effects of cortisone administered orally to 100 patients with rheumatoid arthritis, and the use of postpartum plasma in rheumatoid arthritis and in patients resistant to cortisone and ACTH.

Society Elections.—The American Academy of Dermatology and Syphilology elected the following officers at its Chicago meeting: president, Dr. Donald M. Pillsbury, Philadelphia; vice president, Dr. James Lewis Pipkin, San Antonio, Texas, and secretary-treasurer, Dr. John E. Rauschkolb, Cleveland, who is reelected.——The National Academy of Sciences at its annual meeting in Washington April 23 to 25 elected a new home secretary, two members of the council of the academy, 29 members and three foreign associates. F. Alexander Wetmore, Ph.D., secretary of the Smithsonian Institution, Washington, D. C., was elected home secretary for a four year term beginning July 1 and ending June 30, 1955, succeeding Fred E. Wright, Ph.D., who has served in that capacity for the past 20 years. Dr. Wright was associated with the Carnegie Institution of Washington for many years. Other officers of the academy are: president, Detlev W. Bronk, Sc.D., Baltimore; vice president, Edwin B. Wilson, Ph.D., Brookline, Mass.; foreign secretary, Roger Adams, Sc.D., Urbana, Ill., and treasurer, William J. Robbins, Ph.D., New York.——The American Psychosomatic Society at its annual business meeting April 28 installed Dr. Roy R. Grinker, Chicago, president, and elected Dr. Sydney G. Margolin, New York, president-elect, and Dr. Frederick C. Redlich, New Haven, Conn., secretary-treasurer.

New England Society Meeting.—The spring meeting of the New England Obstetrical and Gynecological Society was held May 16 at the Hillcrest in Leicester, Mass. The program was as follows:

Ralph I. Dorfman, Ph.D., Shrewsbury, Mass., Metabolism of Progesterone.
Ronald C. Sniffen, Worcester, Mass., Testicular Biopsy in the Study of Sterility.
Henry L. Kirkendall, Worcester, Mass., Use of a New Androgen in Gynecology.
Jesse C. Hales, Gardner, Mass., Disastrous Sequelae to the Webster-Baldy Operation.
Eugene L. Richmond, Worcester, Mass., Sarcoma Botryoides of the Cervix.
Daniel L. Joyce, Woburn, Mass., Changes in the Practice of Obstetrics in the Last 25 Years.
Newlin F. Paxson, Philadelphia, Extra Peritoneal Caesarean Section (Moving Picture).
Edward J. Fairbanks, Worcester, Mass., Cornual Pregnancy Following Homo-lateral Salpingectomy.
Richard E. Hunter, Worcester, Mass., Antinatal Use of Dicumerol.
Harold J. Sparling Jr., Fitchburg, Mass., Pathology of Ovarian Tumors as Encountered in Community Hospital Practice.
Newlin F. Paxson, Philadelphia, Comparison of the Sling Operations for Urinary Stress Incontinence. Discussion by Langdon Parsons and Roy J. Heffernan.

Workshops for Crippled Children Personnel.—Members of the National Society for Crippled Children and Adults headquarters staff and a number of consultants will take part in 12 workshops at universities and colleges throughout the country this summer. John J. Lee, Ph.D., Detroit, former president and counselor in special education, will direct the work. Special education workshops will be held at the following institutions: University of Utah, Salt Lake City; University of Wyoming, Laramie; Eastern Montana College of Education, Billings; New Haven State Teachers College, New Haven, Conn.; Teachers College, Columbia University, New York; Michigan State Normal College, Ypsilanti, and School of Education, Syracuse (N. Y.) University. Staff members will lecture at training courses to be held at Wayne University, Detroit; Western Michigan College of Education, Kalamazoo, and Bowling Green State University, Bowling Green, Ohio. Further information may be obtained from the state society for crippled children of the state in which the course will be held or from program services of the national society at 11 S. LaSalle St., Chicago.

Chest Physicians Meeting.—The annual meeting of the American College of Chest Physicians will be held at the Ambassador Hotel, Atlantic City, N. J., June 7-10 under the presidency of Dr. Louis Mark, Columbus, Ohio. In addition to numerous papers, several symposiums are to be given. These and the participants are as follows:

ACTH and Cortisone in Diseases of the Chest, Edwin R. Levine, Chicago, moderator; James M. Carlisle, Rahway, N. J.; Smith Freeman, Chicago; Laurance W. Kinsell, San Francisco; John R. Mote, Chicago, and Maurice S. Segal, Boston.
Chemotherapy and Antibiotics in Diseases of the Chest, Karl H. Pfuetze, Chicago, moderator; Alvin Barach, New York; Sumner Cohen, Oak Terrace, Minn.; Gladys L. Hobby, Ph.D., Brooklyn; Alvis E. Greer, Houston, Texas; Eugene T. McEnery, Chicago; Leopoldo Molinari, Lima, Peru; Carl W. Tempel, Denver, and Selman A. Waksman, Ph.D., New Brunswick, N. J.
Occupational Diseases of the Chest, Edward C. Holmblad, Chicago, moderator; Louis L. Friedman, Birmingham, Ala.; Lloyd E. Hamlin, Chicago; George R. Meneely, Nashville, Tenn.; Frank Princi, Cincinnati; Oscar A. Sander, Milwaukee; Frank R. Ferlaino, Donald O. Hamblin, Edgar Mayer, and Leo Price, all of New York; Burgess L. Gordon, Philadelphia; Leo G. Rigler, Minneapolis; Reginald H. Smart, Los Angeles; Arthur J. Vorwald, Saranac Lake, N. Y., and C. Richard Walmer, Pittsburgh.

Round table luncheon meetings will be held. On Friday at 8 p. m. a motion picture session on diseases of the chest will be presented. Convocation and the president's banquet will take place Saturday evening.

CORRECTION

Progressive Spinal Cord Disease.—The following table, presenting the material on which their report was based, was inadvertently omitted from the paper by Strully, Gross, Schwartzman and von Storch which appeared in THE JOURNAL May 5, 1951, page 10.

Surgical Lesions Simulating Degenerative Diseases of the Spinal Cord

Patient	Age, Yr.	Race	Sex	Diagnosis	Yr. of Onset of Symptoms	Cerebrospinal Fluid Protein* Mg./100 Cc.	Roentgenogram of Cervical Vertebral	Myelography	Operation, Date and Findings†	Result
E. S.	45	White	♀	Multiple sclerosis	1933	.....	Localized mild osteoarthritis; slight narrowing intervertebral space C5-C6	Large "hourglass" filling defect C5-C6 with anterior filling defect in lateral view	Feb. 1950; calcified herniated disk C5-C6 with cord compression	Moderate but definite improvement
A. M.	56	Negro	♂	Syringomyelia, myelitis(?)	1948	95-80 & 83	Marked cervicodorsal scoliosis	Small filling defect left side C7-D1	Oct. 1919; calcified herniated disk C6-C7 chiefly on left side with cord compression	Considerable improvement
M. S.	40	White	♀	Multiple sclerosis(?), syringomyelia(?)	1941	57	Mild osteoarthritis C4, C5, C6; mild narrowing intervertebral space C5-C6	Deflection of pantopaque column from left side at C4 and above	Dec. 1949; calcified herniated disk at C5-C6 with cord compression	No improvement
J. A.	59	White	♂	Amyotrophic lateral sclerosis ruptured cervical disk(?)	1948	.....	Osteoarthritis most pronounced at C6, C7 with narrowing of intervertebral space C6-C7	Reported as normal; reevaluated as normal	Dec. 1949; calcified herniated disk at C6-C7 with cord compression	No improvement
B. Z.	43	White	♀	Multiple sclerosis(?), combined systems disease(?)	1948	86	Osteoarthritis C5-C6 with narrowing of intervertebral space at C5-C6	Significant filling defect at C5-C6 on right	Dec. 1949; calcified herniated disk at C5-C6; some disk material removed	Considerable improvement
J. R.	53	White	♂	Degenerative cord disease(?)	1948	85	Osteoarthritis greatest at C5, C6 with some narrowing of intervertebral space C5-C6	Thinning of pantopaque column at C5-C6 and for short distance above	Aug. 1949; calcified herniated disk at C5-C6 with cord compression	Considerable improvement

* The cerebrospinal fluid protein values were normal except as noted. † The spinal cord was decompressed and the dentate ligaments sectioned.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama: Montgomery, June 26-28. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

Arkansas: * *Regular.* Little Rock, June 14-15. Sec., Dr. Joe Verser, Harrisburg. *Homeopathic.* Fort Smith, June 7-8. Sec., Dr. Carl S. Bungart, 105 N. 14th St., Fort Smith. *Eclectic.* Little Rock, June 7-8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

California: *Written.* San Francisco, June 25-28 and Aug. 20-23. *Oral.* San Francisco, June 23 and Los Angeles, August 18. *Oral and Clinical Examination for Foreign Medical School Graduates.* San Francisco, June 24 and Los Angeles, August 19. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.

Connecticut:* *Regular. Examination.* Hartford, July 10-11. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., Hartford. *Homeopathic.* Derby, July 11-12. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

Delaware: Dover, July 10-12. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

District of Columbia:* *Reciprocity.* Washington, June 11. Sec., Dr. Daniel L. Seckinger, 4130 East Municipal Bldg., Washington.

Florida:* *Examination.* Jacksonville, June 24-26. Sec., Dr. Homer L. Pearson, 701 DuPont Bldg., Miami.

Georgia: Atlanta, June. Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

Guam: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. John Y. Battenfield, Agana.

Hawaii: *Examination.* Honolulu, July 9-12. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

Idaho: Boise, July 9-11. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

Indiana: Indianapolis, June 20-22. Exec. Sec., Miss Ruth V. Kirk, 1138 K. of P. Bldg., Indianapolis 4.

Iowa: * *Written.* Iowa City, June 11-13. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Kansas City, June 6-7. Sec., Dr. O. W. Davidson, 864 New Brotherhood Building, Kansas City.

Kentucky: Louisville, June 6-8. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville.

Louisiana: New Orleans, June. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans 12.

Maine: Augusta, July 10-11. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

Maryland: Baltimore, June 19-22. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic.* Baltimore, June 19-20. *Examination.* Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

Massachusetts: *Examination.* Boston, July 10-13. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston 33.

Mississippi: Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Jackson 113.

Missouri: St. Louis, May 31-June 1, June 7-9. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

Nebraska: * June 1951. Director, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln.

New Hampshire: Concord, Sept. 12-13. Sec., Dr. John Samuel Wheeler, Room 107 State House, Concord.

New Jersey: *Examination.* Trenton, June 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New York: Albany, Buffalo, New York and Syracuse, June 26-29. Sec., Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany 7.

North Carolina: *Endorsement.* Raleigh, June 18-21. Sec., Dr. Joseph J. Combs, 419 Professional Bldg., Raleigh.

North Dakota: Grand Forks, July 4-7. Sec., Dr. C. J. Glaspel, Grafton.

Ohio: *Examination.* Columbus, June 19-21. *Endorsement.* Columbus, April 3. Sec., Dr. H. M. Platter, 21 W. Broad Street, Columbus.

Oklahoma: * *Examination.* Oklahoma City. June 6-7. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: *Examination.* Philadelphia and Pittsburgh, July. Acting Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

South Carolina: *Examination.* Columbia, June 25-27. *Reciprocity.* Columbia, April 2 and May 15. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota: Rapid City, July 17-18. Sec., Dr. Clarence E. Sherwood, 109 Center St., West, Madison.

Texas:* *Examination.* Austin, June 14-16. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

Utah: Salt Lake City, July 11-13. Asst. Dir., Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

Vermont: *Examination.* Burlington, June. Sec., Dr. F. J. Lawliss, Richford.

Virginia: *Examination.* Richmond, June 14-16. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Virgin Islands: St. Thomas, June 12. Sec., Dr. Earle M. Rice, St. Thomas.

Washington:* Seattle, July 16-18. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

West Virginia: Charleston, July 9-11. Sec., Dr. N. H. Dyer, Capitol Bldg., Charleston 5.

Wisconsin:* Milwaukee, July 10-12. Sec., Dr. C. A. Dawson, River Falls.

Wyoming: *Examination.* Cheyenne, June 4. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: Juneau, August. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Colorado: *Examination.* Denver, June 6-7. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver. 3.

Connecticut: *Examination.* New Haven, June 9. Exec. Asst., Miss Mary G. Reynolds, State Board of Healing Arts, 110 Whitney Ave., New Haven.

Florida: *Examination.* Gainesville, June 2. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

New Mexico: *Examination.* Santa Fe, June 17. Sec., Miss Marguerite Cantrell, Box 1522, Santa Fe.

Oregon: *Examination.* Portland, June 2, Sept. 8 and Dec. 1. Sec., Dr. Charles D. Byrne, State Board of Higher Education, University of Oregon, Eugene.

South Dakota: *Examination.* Vermillion, June 15-16. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Tennessee: *Examination.* Memphis, July 5-6. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

Washington: *Examination.* Seattle, July 11-12. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

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* Basic Science Certificate required.

MEETINGS

American Medical Association, Atlantic City, June 11 to 15. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Alaska Territorial Medical Association, Ketchikan, May 31-June 2. Dr. William P. Blanton, Box 2569, Juneau, Secretary.

American Association for the Study of Neoplastic Diseases, St. Agnes Hospital, Baltimore, June 7-9. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N. W., Washington 8, D. C., Secretary.

American College of Chest Physicians, Atlantic City, June 7-10. Mr. Murray Kornfeld, 500 N. Dearborn St., Chicago 10, Executive Secretary.

American College of Radiology, Atlantic City, June 10. Mr. W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Diabetes Association, Chalfonte-Haddon Hall, Atlantic City, June 9-10. Dr. John A. Reed, 11 W. 42d St., New York 18, Secretary.

American Electroencephalographic Society, Hotel Claridge, Atlantic City, June 16-17. Dr. John A. Abbott, Massachusetts General Hospital, Boston 14, Secretary.

American Gastro-Enterological Association, Atlantic City, June 8-9. Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco 2, Secretary.

American Geriatrics Society, Hotel Brighton, Atlantic City, June 7-9. Dr. Malford W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

American Hearing Society, Palmer House, Chicago, June 29. Mrs. Frances E. Lee, 817 Fourteenth St. N.W., Washington 5, D. C., Secretary.

American Medical Women's Association, Hotel Dennis, Atlantic City, June 9-10. Dr. Mildred C. J. Pfeiffer, Woman's Medical College of Pennsylvania, Philadelphia 29, Secretary.

American Neurological Association, Atlantic City, June 18-20. Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

American Ophthalmological Society, The Greenbrier, White Sulphur Springs, W. Va., June 7-9. Dr. Maynard C. Wheeler, 30 W. 59th St., New York 19, Secretary.

American Orthopedic Association, The Greenbrier, White Sulphur Springs, W. Va., June 20-23. Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

American Proctologic Society, Atlantic City, June 7-10. Dr. W. Wendell Green, 1838 Parkwood Ave., Toledo 2, Ohio, Secretary.

American Radium Society, Atlantic City, June 6-9. Dr. John Wirth, U. S. Marine Hospital, Baltimore, Secretary.

American Rheumatism Association, Hotel Dennis, Atlantic City, June 8-9. Dr. Charles Ragan, 620 W. 168th St., New York 32, Secretary.

American Society for the Study of Sterility, Ritz-Carlton Hotel, Atlantic City, June 9-10. Dr. John O. Haman, 490 Post St., San Francisco 2, Secretary.

American Therapeutic Society, Atlantic City, June 8-10. Dr. Oscar B. Hunter, 915 Nineteenth St. N.W., Washington 6, D C., Secretary.

Association for the Study of Internal Secretions, Chalfonte-Haddon Hall, Atlantic City, June 7-9. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City 3, Secretary.

Catholic Hospital Association of the United States and Canada, Convention Hall, Philadelphia, June 2-5. Mr. M. R. Kneifl, 1402 S. Grand Blvd., St. Louis 4, Executive Secretary.

Conference of Presidents and Other Officers of State Medical Associations, Hotel Traymore, Atlantic City, June 10. Mr. John E. Farrel, 106 Francis St., Providence 3, R. I., Secretary.

Great Falls Medical-Surgical Conference, Great Falls, Montana, June 25-26. Dr. William E. Sullens, Box 1066, Great Falls, Chairman.

Idaho State Medical Association, Sun Valley, June 17-20. Dr. Robert S. McKean, 305 Sun Building, Boise, Secretary.

Maine Medical Association, Poland Spring House, Poland Spring, June 17-19. Dr. Frederick R. Carter, 142 High St., Portland 3, Secretary.

Medical Library Association, Denver, June 28-30. Miss Caroline Riechers, Rush Medical College Library, 1758 W. Harrison St., Chicago 12, Secretary.

National Proctologic Association, Madison Hotel, Atlantic City, June 9. Dr. George E. Mueller, 1214 W. Beach Blvd., Biloxi, Miss., Executive Secretary.

Society for Investigative Dermatology, Ritz-Carlton Hotel, Atlantic City, June 7-8. Dr. Herman Beerman, 255 S. 17th St., Philadelphia, Secretary

Society for Vascular Surgery, Chalfonte-Haddon Hall, Atlantic City, June 10. Dr. George D. Lilly, 333 Ingraham Bldg., Miami 32, Fla., Secretary.

Society of American Bacteriologists, Chicago, May 28-June 1. Dr. John E. Blair, 1919 Madison Ave., New York 35, Secretary.

Society of Biological Psychiatry, Claridge Hotel, Atlantic City, June 17. Dr. George N. Thompson, 1136 W. Sixth St., Los Angeles 17, Secretary.

South Dakota State Medical Association, Aberdeen, June 2-6. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

West Virginia State Medical Association, The Greenbrier, White Sulphur Springs, July 19-21. Mr. Charles Lively, 1031 Quarrier St., Charleston 24, Executive Secretary.

INTERNATIONAL

European Congress on Rheumatism, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edströn, Lund, Sweden, Secretary.

General Practitioners Study Club International, Rome, Italy, Sept. 12-15. Dr. John O'Connell, 10300 Lackland Road, St. Louis 14, Mo., U. S. A., President.

International Academy of Proctology, Atlantic City, N. J., U. S. A., June 7-8. Dr. Alfred J. Cantor, 43-45 Kissena Blvd., Flushing, New York, Secretary.

International Anesthesia Research Society, London, England, Sept. 3-7. Mr. R. W. Cope, University College Hospital, London W.C.1, England.

International Association of Allergists, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

International Congress of Anesthesiology, Nursing School of the Salpiettre, 47 Boul de l'Hospital, Paris, France, Sept. 20-22. 12 rue de Seine, Paris 6^{e}, France, Secretariat.

International Congress of Clinical Pathology, London, England, July 16-20. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W.9, England, Secretary.

International Congress of Gynecology, Maison de la Chimie, Centre Marcellin, Paris, France, June 23-29. Dr. Maurice Fabre, 1, rue Jules-Lefebvre, Paris IX, General Secretary.

International Congress on Industrial Medicine, Instituto Superior Técnico, Lisbon, Portugal, Sept. 9-15. Dr. Luis Guerreiro, Instituto Nacional do Trabalho e Previdência, Praça do Comercio, Lisbon, Secretary General.

International Congress on Mental Health, Mexico City, Mexico, Dec. 11-19.

International Congress of Military Medicine and Pharmacy, Paris, France, June 17-23. Physician General Dutrey, 8, bis, rue de Recollets, Paris X, Secretary General.

International Exhibition of Medical Arts, Turin, Italy, May 30-June 12. Prof. S. Teneff, Palazzo della Exposizioni al Valentino, Turino, Italy.

International Gerontological Congress, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

International Hospital Congress, Brussels, Belgium, July 15-21. Capt. J. E. Stone, 10 Old Jewry, London E.C., England, Secretary.

International Poliomyelitis Congress, Copenhagen, Denmark, Sept. 3-7. Prof. Dr. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

International Society of Angiology, Claridge Hotel, Atlantic City, N. J., U. S. A., June 9. Dr. Henry Haimovici, 105 E. 90th St., New York 28, Secretary.

International Society of Surgery, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

International Society for the Welfare of Cripples, Fifth World Congress, Stockholm, Sweden, Sept. 9-14, Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

Pan Pacific Surgical Association Congress, Honolulu, Hawaii, Nov. 7-19. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

Students' International Clinical Congress, Leyden, Utrecht, Groningen and Amsterdam, Holland, July 10-28. N. A. M. Bergstein, Oude Gracht 143 bis, Utrecht, Holland, Secretary General.

World Confederation for Physical Therapy, Copenhagen, Denmark, Sept. 7-8.

World Medical Association, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary-General.

DEATHS

Brackett, Edward Sumner ⊕ Providence, R. I.; born in 1875; Yale University School of Medicine, New Haven, Conn., 1902; member and past president of the New England Obstetrical and Gynecological Society; past president and vice president of the Rhode Island Medical Society; past president of the Providence Medical Society and Rhode Island Birth Control League; past president of the Yale Association of Rhode Island; vice president of the Hospital Service Corporation of Rhode Island; consulting obstetrician, Providence Lying-In Hospital, where he had been chief of staff; consulting gynecologist, Miriam and Rhode Island hospitals; consulting gynecologist South County Hospital in Wakefield and the Memorial Hospital in Pawtucket; died in the Jane Brown Memorial Hospital March 1, aged 75, of pulmonary emphysema and bronchiectasis.

Blackburn, John Henry ⊕ Bowling Green, Ky.; born in Woodburn, Ky., Aug. 7, 1876; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; in 1932 member of the House of Delegates of the American Medical Association; past president of the Kentucky State Medical Association, of which he had been councilor, the Warren County Medical Society, and the Third District Medical Society; past member of the state board of health; served during World War I; affiliated with Bowling Green City Hospital; director of the American National Bank; died Feb. 17, aged 74, of coronary occlusion.

Abbott, Theodore Jacob ⊕ Cornwall-on-the-Hudson, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1900; an Associate Fellow of the American Medical Association; served in France during World War I; formerly clinical professor of medicine at University-Bellevue Medical Center, New York, where he was affiliated with Bellevue Hospital and consultant to the U. S. Veterans Bureau and the Hospital for Special Surgery; died March 1, aged 78, of heart disease.

Anderson, Jesse James, Jacksonville, Fla.; Chicago Medical School, 1926; served during World War I; died in the Veterans Administration Hospital, Bay Pines, March 8, aged 56.

Bagli, Francis Lucian, Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1921; member of the American Medical Association; died March 12, aged 55.

Bartlett, Ezekiel Merrell, Clarksville, Mo.; University of Louisville Medical Department, 1900; member of the American Medical Association; on the staff of Pike County Hospital in Louisiana; died March 15, aged 73, of coronary occlusion and generalized arteriosclerosis.

Blackstone, Alfred Varney ⊕ Absarokee, Mont.; Harvard Medical School, Boston, 1907; served as health officer; affiliated with Stillwater Community Hospital in Columbus; died March 7, aged 71, of cerebral hemorrhage.

Blumer, Frederick William, Lincoln, Neb.; Lincoln Medical College of Cotner University, 1908; veteran of the Spanish-American War; medical examiner during World War I; died in the Veterans Administration Hospital March 5, aged 70, of coronary occlusion.

Bryant, William Cullen, Chouteau, Okla.; Memphis Hospital Medical College, 1900; member of the American Medical Association; died in Muskogee March 8, aged 84, of carcinoma of the prostate.

Buckmann, Henry D., Martinez, Calif.; Cooper Medical College, San Francisco, 1908; an honorary member of the staff of Community Hospital; member of the American Medical Association; died March 7, aged 68, of carcinoma of the tongue.

Burgett, Warren Eugene ⊕ Bement, Ill.; Kentucky School of Medicine, Louisville, 1886; died in March, aged 85.

Clark, Carl Wesley ⊕ San Rafael, Calif.; Rush Medical College, Chicago, 1915; died in the Southern Pacific Hospital, San Francisco, Feb. 10, aged 62, of cerebral thrombosis.

Dixon, Garvin Jonathan, St. Louis; Meharry Medical College, Nashville, Tenn., 1916; on the staffs of the Homer G. Phillips Hospital, St. Mary's Infirmary and People's Hospital; served as magistrate of the Third District; died March 5, aged 63, of cerebral hemorrhage.

Elmer, Robert Potter, Wayne, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; member of the American Medical Association; author of "Archery" and coauthor of several books on the sport; on the courtesy staff of Bryn Mawr (Pa.) Hospital, where he died March 4, aged 73, of myocardial infarction.

Estey, Guy W., Miami, Fla.; Middlesex College of Medicine and Surgery, Cambridge, Mass., 1918; died in Miami Hospital Feb. 23, aged 63, of coronary thrombosis.

Faucett, Samuel Thompson, Kirkland, Wash.; Columbia University College of Physicians and Surgeons, New York, 1903; died in the Marine Hospital, Seattle, Jan. 22, aged 71, after a sympathectomy.

Fleury, Oswald Theodore ⊕ Holyoke, Mass.; Tufts College Medical School, Boston, 1919; fellow of the American College of Surgeons; affiliated with Holyoke and Providence hospitals; died March 1, aged 56, of coronary thrombosis.

Jordan, William Mudd, Birmingham, Ala.; Columbia University College of Physicians and Surgeons, New York, 1895; member of the Southern Surgical Association; fellow of the American College of Surgeons; veteran of Spanish-American War and World War I; died in St. Vincent's Hospital Feb. 6, aged 77, of rupture of the esophageal varix and cirrhosis of the liver.

Kerr, Alvin Robert, Attica, Ind.; Indiana University School of Medicine, Indianapolis, 1910; member of the American Medical Association; served in France during World War I; on the staff of Community Hospital, Williamsport; on the courtesy staff of St. Elizabeth Hospital, Lafayette; died in Veterans Administration hospital, Indianapolis, March 11, aged 69, of cerebral hemorrhage.

Lamb, Lloyd Lewit, Zephyrhills, Fla.; Hospital Medical College, Eclectic, Atlanta, 1911; died Feb. 12, aged 81, of cerebral hemorrhage and arteriosclerosis.

Lanham, Logan Taylor, Mount Olivet, Ky.; University of Louisville School of Medicine, 1930; member of the American Medical Association; chairman of the school board; died Feb. 3, aged 44, of heart disease.

McKechnie, Frederick Joseph, Springfield, Mass.; Harvard Medical school, Boston, 1900; member of the American Medical Association; served during World War I; at one time practiced in New York, where he was appointed medical advisor to the New York Board of Health and was a member of the staffs of the New York Ear and Eye Infirmary and the Manhattan Eye, Ear and Throat Hospital; a member and at one time president of the staff, Mercy Hospital; died March 6, aged 76, of coronary thrombosis.

Maulding, Homer Ray, Atlanta; University of Georgia School of Medicine, Augusta, 1935; member of the American Medical Association; died March 3, aged 42, of cerebral thrombosis.

Miller, Lloyd T., Yazoo City, Miss., Meharry Medical College, Nashville, Tenn., 1893; died March 8, aged 76, of cerebral hemorrhage.

Moore, Sair C., Cadillac, Mich.; Detroit College of Medicine, 1899; member of the American Medical Association and the American Public Health Association; served as health commissioner of Wexford County and as president of the board of education; formerly mayor of Cadillac; affiliated with Mercy Hospital, where he died March 4, aged 76, of diabetes mellitus.

⊕ Indicates Fellow of the American Medical Association.

GOVERNMENT SERVICES

ARMY

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PUBLIC HEALTH SERVICE

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Requirements to be met by candidates are as follows:

Both grades.—United States citizenship; at least 21 years of age, and graduation from a recognized school of medicine.

Assistant surgeon.—At least seven years' educational training and professional experience subsequent to high school.

Senior assistant surgeon.—At least 10 years' educational training and professional experience subsequent to high school.

Applicants who will complete these requirements within nine months of the date of the written examination will be admitted but may not be appointed until they meet the above requirements. Physicians who are successful in the examination and are now serving internships will not be placed on active duty in the regular corps until completion of internship. The examination will include an oral interview, physical examination, and written objective tests covering the professional field.

Entrance pay for an assistant surgeon with dependents is $5,686.56 per annum; for senior assistant surgeon with dependents, $6,546. These figures include the $1,200 annual additional pay received by medical officers as well as subsistence and rental allowance. Officers on active duty are not eligible to receive disability compensation from the Veterans Administration.

Retirement pay after 30 years of service or at the age of 64 is three-fourths of the annual basic pay at the time of retirement. Retirement for disability is authorized under the Career Compensation Act, and minimum disability retirement pay is ordinarily one-half of the annual basic pay at the time of retirement. Additional benefits include periodic pay increases (time served as a member of the armed forces is credited), 30 days annual leave, sick leave, full medical care, and the usual privileges extended to officers of the military forces.

Application forms may be obtained from the Surgeon General, U. S. Public Health Service, Washington 25, D. C. Attention: Division of Commissioned Officers.

Survey of Medical School of Formosa.—Dr. George H. Humphreys, professor of surgery, College of Physicians and Surgeons, and Dr. Magnus I. Gregerson, professor of physiology, at Columbia University, New York, have been given special assignments to the ECA Mission to Formosa. As part of a study sponsored by the Public Health Service and the Economic Cooperation Administration, they are conducting separate surveys of medical education at the Medical School of Formosa to determine methods by which medical teaching in Formosa might be improved. The surveys include reviews of the curriculum and teaching facilities and the requirements of the school for specialists in public health and medical education. Drs. Humphreys and Gregerson will prepare a single report of their findings. This is expected to be used by the Public Health Service, the Economic Cooperation Administration and Columbia University as the basis for furnishing specialized teaching personnel and other assistance to the Medical School of Formosa.

Morden, Charles Bowman, Bad Axe, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; past president of the Huron County Medical Society; chief of staff, Hubbard Memorial Hospital from 1919 to 1946; died March 5, aged 71, of chronic myocarditis and diabetes mellitus.

Murphy, Raymond James ⊕ Chicago; Loyola University School of Medicine, Chicago, 1926; served during World War I; died March 2, aged 52, of chronic myocarditis.

Norris, Claude Bazil, Riverside, Calif.; University of Oklahoma School of Medicine, Oklahoma City, 1921; specialist certified by the American Board of Dermatology and Syphilology; member of the House of Delegates of the American Medical Association, 1939, 1940, and 1941; at one time practiced in Youngstown, Ohio, where he was president of the Mahoning County Medical Society and on the staff of the Youngstown Hospital; at one time editor of the *Bulletin of the Mahoning County Medical Society;* died March 6, aged 62, of cerebral occlusion.

Paynter, Lawrence W. ⊕ Salem, Ind.; University of Louisville Medical Department, 1893; served as county coroner; died in the Washington County Hospital March 5, aged 79, of coronary thrombosis.

Quisling, Gunnar D. ⊕ Madison, Wis.; University of Illinois College of Medicine, Chicago, 1932; served during World War II and received the Legion of Merit; one of the founders of the Quisling Clinic; died March 18, aged 41, of sarcoma of the lung.

Reams, Bernard L., Richmond, Va.; Medical College of Virginia, Richmond, 1894; died Jan. 19, aged 78.

Recca, John, New York; New York Homeopathic Medical College and Flower Hospital, New York, 1917; served on the staffs of Flower and Fifth Avenue Hospitals, Hospital for Joint Diseases, and Babies Hospital; died Feb. 25, aged 58, of coronary thrombosis.

Reiss, George Samuel ⊕ Long Beach, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1914; fellow of the International College of Surgeons; served during World War I; medical director of the Long Beach Memorial Hospital, where he died March 2, aged 58, of coronary thrombosis.

Rosner, John Dory, Cornwall-on-the-Hudson, N. Y.; Medizinische Fakultät der Universität, Wien, Austria, 1906; member of the American Medical Association; served on the surgical staff of the Cornwall (N. Y.) Hospital, where he died Feb. 20, aged 69, of subdural hemorrhage.

Schoenfeld, John Burton, Birmingham, Mich.; University of Michigan Medical School, Ann Arbor, 1930; member of the American Medical Association; served in the South Pacific during World War II; formerly physician at Cranbook School in Bloomfield Hills; member of the staffs of Harper Hospital in Detroit and St. Joseph Mercy Hospital in Pontiac; died Feb. 24, aged 45, of myocardial infarction.

Schuettler, Arthur Frederick, East St. Louis, Ill.; Bennett Medical College, Chicago, 1915; died March 22, aged 61, of acute pulmonary edema.

Shaw, Arthur Ernest ⊕ Columbia, S. C.; Jefferson Medical College of Philadelphia, 1905; died Feb. 8, aged 75, of coronary thrombosis.

Spangler, Charles Anthony ⊕ Perkasie, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1931; vice president of the Bucks County Medical Society; served during World War II; director of the Bucks County Mental Health Society; affiliated with Grandview Hospital in Sellersville and the Quakertown (Pa.) General Hospital; died March 2, aged 45, of coronary thrombosis.

Spruce, Clifford Judson, Chicago; Jenner Medical College, Chicago, 1907; died in West Suburban Hospital, Oak Park, March 18, aged 81, of coronary thrombosis.

Tomlinson, Robert Williams, Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1912; formerly practiced in Wilmington, Del., where he served as president of the New Castle County Medical Society; died in General Hospital March 1, aged 67, of cerebral thrombosis.

Waddell, Jesse Clyde, Paton, Iowa; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1907; member of th American Medical Association; affiliated with St. Joseph Mercy Hospital and Lutheran Hospital in Fort Dodge, where he died March 20, aged 69, of heart failure.

Wallace, William Lindsey ⊕ Hong Kong, China; University of Tennessee College of Medicine, Memphis, 1932; served an internship and residency at Knoxville General Hospital, Knoxville, Tenn.; member of the Tennessee State Medical Association; attached to the American Southern Baptist Mission; served with the Mission Stout Memorial Hospital in Wuchow, Kwangsi, China; died in a Chinese Communist prison Feb. 10, aged 43.

Waller, Benjamin S., Silver Creek, Miss.; Louisville Medical College, 1897; member of the American Medical Association; past president of the Laurence County Medical Society; died March 20, aged 81.

Welles, Charles Newton, Carlsbad, Calif.; Cleveland Homeopathic Medical College, 1904; died Feb. 14, aged 81, of ulcer of the stomach.

Wheeler, Casabianca C., Paintsville, Ky.; Hospital College of Medicine, Louisville, 1904; died in a Detroit hospital Feb. 21 aged 78.

White, Howard King ⊕ Philadelphia; Hahnemann Medica College and Hospital of Philadelphia, 1909; received two citations for meritorious service in the Meuse-Argonne area durin World War I; during World War II, chief medical examine for Draft Board No. 20; on the courtesy staff of Memorial and Hahnemann hospitals; died Jan. 3, aged 67, of coronary occlusion.

White, Michael William ⊕ Somerville, Mass.; Harvard Medica School, Boston, 1898; on the staff of Somerville Hospital, where he died Jan. 1, aged 78, of cerebral hemorrhage.

Whittaker, Howard, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1905; on the courtesy staff of Hahnemann Hospital; died March 23, aged 68, of cerebral hemorrhage.

Williamson, Joseph Patterson ⊕ Winter Park, Fla.; Medical College of the State of South Carolina, Charleston, 1928; member of the American Association of Industrial Physicians and Surgeons; served during World War II; on the staff of Orange Memorial Hospital in Orlando; died in Orlando Feb. 2, aged 50 of carcinoma.

Willis, Arthur Ponder, Candler, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1904; member of the American Medical Association; formerly chairman of the board of health of Canton; died in Ashton Park Hospital, Asheville, Feb. 27, aged 71, of hypertensive heart disease and arteriosclerosis.

Wilson, M. Sylvia McQuitty, Clearwater, Fla.; Boston University School of Medicine, 1893; formerly associated with the U. S. Public Health Service; died Jan. 22, aged 85, of coronary thrombosis.

Winford, Thomas Edgar, Dallas, Texas; Baylor University College of Medicine, Dallas, 1920; member of the American Medical Association; awarded the W. H. Adamson Trophy in Oak Cliff in 1943 for child welfare work; on the staff of Dallas Methodist Hospital; died March 7, aged 58.

Winters, Christian, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1891; died March 23, aged 87.

Wolfe, Thomas Lindly, Mount Vernon, Iowa; Kentucky School of Medicine, Louisville, 1891; died Feb. 13, aged 81, of cerebral sclerosis.

Worley, Charles Leslie ⊕ Ottumwa, Iowa; State University of Iowa College of Medicine, Iowa City, 1933; president of the Wapello County Medical Society; served during World Wars I and II; on the staff of Ottumwa Hospital and St. Joseph Hospital, where he died March 17, aged 52, of coronary occlusion.

Yerby, Leonard Donald, Long Beach, Calif.; University of California Medical School, San Francisco, 1939; died recently, aged 36, of pulmonary tuberculosis.

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Federal Millions for Cancer Research.—The program of federal aid begun in 1947 for expanding cancer research facilities throughout the country is on its way to completion, the federal security administrator announced April 24. Since inauguration of the program, the Public Health Service has awarded $16,303,000 to aid cancer research construction projects at nonfederal institutions. Forty-seven medical schools, hospitals and medical research centers have received grants to build and equip laboratories and clinics for cancer studies. Money for this phase of the program was set aside by Congress before the outbreak of the Korean war. No new grants are being awarded during the current fiscal year.

Established in 1947 by Congress to speed the attack on cancer, the program is under the supervision of Dr. John R. Heller, director of the National Cancer Institute. Grants are recommended by the National Advisory Cancer Council and are awarded by Dr. Leonard A. Scheele, surgeon general of the Public Health Service. Lists of completed projects and projects under construction follow.

COMPLETED PROJECTS

Medical College of Alabama and Jefferson County Health Department, Birmingham, $47,280. Used to build laboratories for studies of diagnostic tests for cancer.

County Hospital, Los Angeles, $35,255. Converted an old jail hospital building to a cancer research laboratory.

George Washington University, Warwick Clinic for Cancer and Allied Diseases, Washington, D. C., $50,000. Provided equipment and laboratories for cancer research.

Georgetown University medical school, Washington, D. C., $148,500. Added laboratories and equipment for cancer research at the medical school and hospital.

University of Chicago, Goldblatt Memorial Hospital for Cancer Research, Chicago, $690,000. Paid for two and one-half floors of laboratories and clinical research facilities in new seven story building devoted to cancer research.

State University of Iowa, Iowa City, $12,250. Modified laboratories for radioisotope studies in cancer.

Jackson Memorial Laboratory, Bar Harbor, Maine, $350,000. Contributed to the rebuilding of two large laboratory units used in important genetic studies in cancer.

Boston University school of medicine, Boston, $62,750. Built laboratories and enlarged buildings for experimental animals used in cancer research.

Tufts College medical school, Boston, $133,522. Grant used in constructing and equipping cancer research laboratories, in remodeling clinical cancer research facilities in two affiliated hospitals and in constructing units for experimental animals used in cancer studies.

Columbia University College of Physicians and Surgeons, New York, $1,000,000. Provided one half of the construction and equipment costs of four floors of large new research unit for investigations of many phases of the cancer problem.

University of Rochester, Rochester, N. Y., $434,368. Used for construction of three floors of addition to school of medicine to provide improved facilities for cancer research.

University of Oregon medical school, Portland, $10,000. Alterations to provide an isotope laboratory for cancer research.

Institute for Cancer Research, Philadelphia, $198,468. Bought technical equipment for new Institute for Cancer Research.

University of Pennsylvania, Philadelphia, $56,208. Remodeled cancer laboratories and bought new equipment for cancer research in the medical school's pathology department.

Medical College of the State of South Carolina, Charleston, $16,000. Built additional units for experimental animals used in cancer investigations.

Meharry Medical College, Nashville, Tenn., $50,385. Two projects, one to build and equip laboratories for cancer research and a second to provide quarters for experimental animals used in the cancer program.

Medical College of Virginia, Richmond, $10,588. Remodeling and equipment for clinical research in cancer.

PROJECTS UNDER CONSTRUCTION

University of California medical school, San Francisco, $1,000,000. To provide laboratories and clinical research facilities for a cancer research institute in new multimillion dollar medical center.

University of Colorado, Denver, $400,000. To pay for much of the construction of a five story cancer research building adjoining the hospital and medical school.

Yale University, New Haven, Conn., $250,000. To provide new animal laboratory needed for expansion of cancer research program.

George Washington University, Washington, D. C., $200,000. To construct cancer research laboratories in association with new facilities for the Warwick Memorial Clinic.

Emory University, Atlanta, $500,000. To build and equip cancer laboratories in new research center connected to hospital.

Loyola University Stritch School of Medicine, Chicago, $47,300. Alterations to provide laboratory for radioisotope studies.

University of Kansas, Kansas City, Kan., $200,000. To add cancer research laboratories in new building for pathology, bacteriology and pharmacology departments.

Johns Hopkins University, Baltimore, $750,000. To construct cancer research section of new research building.

Beth Israel Hospital, Boston, $50,000. To construct animal laboratory for cancer studies.

The Children's Medical Center, Boston, $100,000. To buy equipment for research building erected by Children's Cancer Research Foundation.

Massachusetts General Hospital, Boston, $700,000. To construct cancer laboratories in new research building housing laboratories for arthritis and cardiovascular studies.

New England Deaconess Hospital, Boston, $485,000. To construct four story laboratory building for use of Harvard Cancer Commission, State Tumor Diagnosis Service and others in cancer research, experimental cancer detection clinic.

Wayne University College of Medicine, Detroit, $250,000. To construct and equip cancer laboratory in new addition to Detroit Receiving Hospital.

University of Minnesota, Minneapolis, $879,438. To build cancer laboratories in Mayo Memorial Center and large clinical research unit in University Hospital.

Washington University, St. Louis, $250,000. To assist in constructing new hospital to include facilities for clinical research in cancer.

Duke University, Durham, N. C., $200,000. To add to research building cancer laboratories for leukemia and radioisotope studies.

University of North Carolina, Chapel Hill, $200,000. To construct cancer research laboratories in new outpatient and clinical research building.

Oklahoma Medical Research Foundation, Oklahoma City, $125,000. To provide cancer research facilities in new medical research institute at the University of Oklahoma.

University of Tennessee Medical School, Memphis, $491,584. To construct four story laboratory building for cancer research.

University of Texas, Houston, $300,000. To construct cancer research laboratories as part of the new $5,500,000 M. D. Anderson Hospital.

University of Utah School of Medicine, Salt Lake City, $416,404. To construct laboratory building for cancer research in new medical center.

University of Virginia School of Medicine, Charlottesville, $75,000. To build laboratories centralizing cancer research now carried on in scattered clinics and laboratories.

University of Wisconsin, Madison, $975,000. To construct clinical cancer research units needed to consolidate clinical and laboratory studies.

Report on Water Pollution.—A newly-published report on water pollution in the United States sets forth the first national summaries of data from initial state and federal studies for the development of comprehensive pollution abatement programs for the nation's waterways. They indicate that public and private investments of 9 million to 12 million dollars will be required during the next decade to meet present needs for 10,000 new waste treatment plants, replacements, additions or enlargements, and to keep up with future industrial expansion and population growth. Surgeon General Leonard A. Scheele pointed out that the 10,000 new waste treatment plant projects that are known to be necessary represent only a part of present needs; still undetermined are the needs of 1,600 municipalities and 5,500 industries that were not covered by the study.

The state and federal cooperative studies to date show a total of more than 22,000 sources of pollution in the United States. These are divided nearly equally between 11,800 municipal sewer systems and 10,400 independent factory waste outlets. Despite the reduction of pollution by 9,300 treatment plants now operating—6,700 municipal and 2,600 industrial plants—wastes discharged into rivers and lakes are equivalent to those from a population of over 150,000,000.

The studies disclose that the 11,811 municipal sewer systems throughout the country serve populations totaling 91,762,000, but only 6,628 of these systems serving about 46,500,000 people have sewage treatment plants. Out of 10,401 industries independently discharging wastes into waterways, 2,595 treat their wastes, but 3,659 do not. Comparable information is not available for 4,147 other industrial establishments.

As of July 1, 1950, there were over 400 treatment plants under construction, of which 326 were municipal projects and 114 for industry. At that time final plans had been approved for 854 additional municipal treatment plants and 124 industrial treatment plants. This increase, however, did not begin to meet waste disposal problems brought about by an unexpected increase in population and increased industrial production.

Responsibility for controlling water pollution rests with local communities and those industries responsible for industrial pollution, the report emphasizes. But in a number of states, according to the report, the widespread nature of pollution problems has impelled the state government to make money available to municipalities for the construction of public sewage treatment works.

FOREIGN LETTERS

PARIS

Kidney Transplantation.—Servelle, P. Soulié, J. Rougeulle, C. Delahaye and Touche have been studying transplantation of the kidneys of dogs. The first of the 20 transplantations consisted only in the removal of a kidney and its attachment to the blood vessels of another dog. Later, improving their method, they could make renal grafts with secretion for a few weeks, studied by connecting the urethra with the skin. In the dog, they regularly noted ascending pyelitis, pyelonephritis and the destruction of the kidney. Furthermore, the total disappearance of the kidney was noted, almost nothing remaining except an artery or a vein with thrombosis. They have just accomplished the first transplantation of an executed criminal's kidney into a 22 year old female patient with hypertensive azotemic nephritis and albuminuria (5 gm.). In 1949, exploration of the right iliac fossa showed absence of the kidney and urethra, and section of the right splanchnic nerve and a lumbar sympathectomy were performed. Examination previous to transplantation showed a slight mesocardiac systolic murmur; radiography disclosed significant left hypertrophy; the erythrocyte count was 1,900,000, leukocyte count 15,000 (88% polymorphonuclear neutrophils), and hemoglobin 70%. The absence in the urine of red cells, pus, casts and bacteria was noted. Blood urea was 3 gm. per 1,000; the alkaline reserve was 54%.

The donor's kidney was taken within minutes after the execution, immediately perfused with Ringer's solution and kept at constant temperature till arrival at the hospital, where a second surgical team had prepared the patient. There was no hypogastric artery; the iliac artery was abnormally long. The iliac vein was in its normal place and was cut under the arch after ligature and clamping. The renal vein was anastomosed end to end; then the renal artery was anastomosed terminolaterally on the external iliac artery. After removal of arterial clamps, the artery pulsates and dilates; thus blood circulation is resumed through the kidney. The urethra is connected with the skin (a urethral catheter in its interior); urine then flows drop by drop.

The postoperative condition was normal for 48 hours: there was 20 cc. of urine on the first day and 30 cc. on the second. On the third day, acute pulmonary edema appeared, which subsided under the influence of bloodletting and cardiotonics associated with oxygen. Urinary secretion increased progressively, reaching 120 cc. on the 15th day. The patient's general condition was good; she could eat and drink. The fibrin that had been observed in the urine since the third day disappeared. On the 16th day, urinary secretion reached 192 cc. To compensate for the elimination of chlorides, 250 cc. of isotonic sodium chloride solution was injected subcutaneously; this provoked a violent shock, which subsided within a few hours. On the 19th day, the urinary secretion of the grafted kidney reached 600 cc. per day, the patient refused to eat; her psychic condition suggested chloropenia. A very slow subcutaneous injection of isotonic sodium chloride solution was given; the first 150 cc. was well tolerated, but, by the end of the administration of the 250 cc., shock with pallor, fall of blood pressure, and other deleterious changes occurred, improved on administration of citrated blood but reappeared later and provoked death.

At autopsy it was observed that the grafted kidney was normal both in volume and in appearance; the other kidney had the volume of a tangerine. Notwithstanding the fatality (for which the injections of the saline solution were partly responsible) the authors believe that such transplantation may be helpful and that in a patient with a less impaired condition, the postoperative effects would not have been so complicated.

The foregoing report was made at a meeting of the Medical Society of the Paris Hospitals (Jan. 26, 1951), at which C. Dubost, N. Oeconomos, J. Vaysse, J. Hamburger, P. Milliez and J. Lebrigand also reported on kidney transplantation, performed in two cases. Their first patient was a 44 year old woman who had a right nephrectomy for renal tuberculosis and for years had had hypertensive, edematous, azotemic nephritis in the remaining kidney. On Jan. 12, a kidney was grafted on the right iliac vessels with cutaneous ureterostomy. On the 14th day after the operation, the urinary secretion of the grafted kidney reached 230 cc.; urea 12 gm., and chlorine 0.86 gm.; there was no glycosuria.

The other patient was a 20 year old woman who for 12 years had had glomerulonephritis with progressive albuminuria and azotemia. Recent aggravation and a state of torpor necessitated a renal graft, performed on the right iliac vessels with cutaneous ureterostomy. During the first days, the grafted kidney secreted a few cubic centimeters of clear urine; blood urea was 3.40 gm. and urinary urea 9.5 gm. (no glycosuria). It is still too early to foretell the future in these two cases; the authors will report results later.

Urban and Rural Tuberculosis.—Dr. G. Cuvier, technical adviser of the Central Funds of the Social Agricultural Mutuality, taking the statistics of the National Institute of Hygiene as a basis, made a comparative study of the evolution of tuberculosis in urban and rural environments. This study embraces two periods: (*a*) from 1931 to 1935 and (*b*) from 1945 to 1948. The average per 10,000 inhabitants was established. For the period 1931-1948, the total number of new cases of tuberculosis registered by dispensaries diminished in urban environments from 113.4 to 108.15 and increased in rural environments from 50.75 to 56.10. Among patients the number of pulmonary cases diminished in urban environments from 73 to 43.60 and in rural environments from 32.90 to 25.50. Other forms of tuberculosis appear to have increased in urban environments from 40.4 to 64.55 and in rural ones from 17.85 to 30.60. The total number of deaths of all ages declared as due to tuberculosis appears to have diminished in urban environments from 17.85 to 8.63; rural deaths decreased from 14.34 to 8.14.

Tuberculosis has decreased proportionally less in the country than in towns; the decrease was especially noted in the pulmonary forms. In the country, the general mortality appears to be higher than in towns in relation to corresponding morbidity. In a report to the National Commission on BCG Dr. Cuvier drew the attention to the importance of bovine orgin in a large number of cases, particularly in nonpulmonary forms, especially osseous and meningeal infections, in infants. He advocated that the use of raw milk be prohibited.

Congress on Military Medicine.—The 13th congress on International Military Medicine and Pharmacy will take place in Paris June 17-23, 1951, under the presidency of Surgeon General Jame, director of the army medical service.

BELGIUM

Medicine in the Belgian Congo.—After his trip to the Belgian Congo, Dr. L. Mayer presented to the Association of the Belgian Medical Press a report on the present state of medicine in the colony. He made a detailed analysis of the status of the doctor and his family. The initial yearly salary of a doctor working for the government amounts to approximately 200,000 Belgian francs, after deduction of all taxes. Lodging conditions are satisfactory, and elementary or secondary schools are available almost everywhere. There are other material advantages, including allowances for room and board in the colony for the doctor and his family and pensions.

The scientific attractions include completely modern installations, and medical assistants and hospital attendants comparable to the best nurses. The training of sanitary personnel is extensive. The official teaching, especially developed in Leo-

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The items in these letters are contributed by regular correspondents in the various foreign countries.

poldville, Usumbura and Stanleyville, includes a school for medical assistants, a school for hospital attendants (mainly for hygiene services) and a school for midwife-aids. The school for native medical assistants includes a section for medical assistants proper (four years of theoretical studies and two years as interns) a section for nurses (three years of theory, two years as interns) and a section for midwife-aids (two years of theory and practice). Dr. Mayer believes that 400 more doctors will soon be necessary in the Congo.

Judet's Operation.—Dr. Verbrugge, of Antwerp, recently reported on about 30 cases in which the head of the femur was replaced by a prosthesis in acrylic substance. Indications for use are arthritis deformans, pseudarthrosis with osteolysis of the neck, congenital dislocation in the adult and pseudarthrosis of the femoral neck. The simplicity and efficiency of the operation permit its use in luxation, subluxation and disturbances of growth.

In arthritis deformans, previous methods gave only partial relief and required long postoperative treatment. Judet's operation, performed with Hueter's incision, does not entail any muscular loss; it allows the patient to get up after two or three weeks and to be ambulatory after four or five weeks; it does not require any complicated postoperative treatment.

Pseudarthrosis of the femoral neck involves severe infirmity owing to shortening, lack of support and pain; it is sometimes associated with aseptic necrosis of the femoral head. Judet's operation must often be completed by osteotomy of the greater trochanter.

For fracture of the femoral neck (the "unsolved fracture" of the Anglo-Saxons), all previously used methods entail a high percentage of complications. Judet's technique allows the patient to return to his occupation within three months. Other indications include traumatic subluxation, congenital dislocation and epiphysiolysis.

Scientific Research in the Belgian Congo.—Prof. P. Staner recently held a conference at the University Foundation of Brussels, stressing the importance of scientific research as a factor of the economy of the Congo. The author traced the history of the important researches undertaken since the time of Leopold II: The number of research laboratories increased since 1933. For example, the production of oil varied between 800 and 1,000 kg. per hectare in the palm-tree plantations in 1934 and was 2,000 kg. per hectare in 1950. Culture of cotton gives the natives resources that amount to approximately 200 million Belgian francs a year. Extraction of quinine salts has been improved.

Saturnism in Pyrite Mines.—An inquiry carried by Dr. Genot in pyrite mines gave interesting results concerning the symptoms of lead intoxication. Ten to 12 per cent of the workmen showed a lead line on the gums, mainly where teeth were missing. Sensory disturbances are mainly localized along the course of the nerves. They occur in 44 per cent of the workmen after 15 years of service, especially in men working at the bottom of the mine and in 45 year old miners. These figures are considerably higher than the average observed in other industries. These symptoms are usually very mild; Dr. Genot did not find any severe lead intoxication in the pyrite mines he visited.

Goiter in East Belgium.—Professor Brull published a study on the incidence of thyroid disturbances in East Belgium, based on more than 4,000 examinations. He concluded that there was an 8.5% incidence of thyroid hypertrophy in adults. Of 303 female student nurses, 17.2% had goiter; of 876 male students between the ages of 18 and 25, 14.1% had goiter. These figures show that half the patients with pubertal goiter recover.

Among 1,338 goiters diagnosed before 20 years of age, 213 had been noticed by the patient's family before 10 years of age. They were always colloid goiters. Thus, at least 40% of the goiters were present before the patient reached the age of 20. It is difficult to decide whether one must give iodine in case of pubertal goiter. Some patients are greatly benefited by this, while in others the effectiveness of iodine is temporary or doubtful.

Hereditary influence can be traced in 1,337 out of 4,134 cases; 82.1% of goiters were observed in women and 17.9% in men. Among 4,134 cases, Brull observed 1,819 goiters with toxic manifestations, very obvious in 964 cases and mild in 854. Th author observed a striking incidence of cardiac disturbances i persons with goiters classified as nontoxic. The incidence is lo in young people and increases in older age groups. Among 52 patients above 40 years of age with nontoxic goiters, 58.5% had cardiac disturbances.

COLOMBIA

Request Changes in Medical Practice Act.—Prof. José del Carmen Acosta, president of the Colombian medical federation, addressed an open letter to the president of Colombia, which appeared in *Heraldo Médico* (January-February, 1951). The medical body requested from the government changes in th organization and functioning of the Colombian Institute o Social Welfare as well as in the law on medical practice in relation to medical services in rural public health and rural hygiene (*J. A. M. A.* **142:**835 [March 18] 1950). The consensus of the medical profession is that all physicians who finished their medical studies should be given their M.D. degree immediately afte they finish their medical studies and not after a year of rura service. Change is also requested in the law by which foreig physicians, graduates of universities whose diplomas are no recognized in Colombia, are allowed to practice medicine if the apply to the ministry of hygiene for an appointment for rura service for three years. The members of the medical federatio believe this is unnecessary, since, for lack of economical an other means, the rural health program will not be immediatel realized and since the number of physicians who finish thei studies in the Colombian medical faculties every year is sufficien to fulfill the actual and future needs of medical care of the rural population. In this manner all rural territories, small towns and municipalities will have Colombian graduate physicians without the need of importing foreign physicians. The medical body collaborated with the Colombian Institute of Social Welfare, but the medical body has pointed out the dangers of extension of total insurance. Social insurance should protect the centers that are in economic need but not those which are not in need. Large industrial centers in which adequate medica services for the workers has been already established should not be included in social insurance. The members of the federation believe that the physicians should work in the Institute of Social Insurance on a fee basis and not on salaries.

Personals.—Drs. L. Fortier and P. B. Salatich of New Orleans; A. Antweil of Fort Worth, Texas; W. Gildorf, of Valley City, N. D.; M. Sonderegger, of Ely, Nev.; J. Gordon, of Lewisburg, Tenn.; W. Fountain, of Merced, Calif.; W. Terrel Simpson, of Winter Haven, Fla.; J. Fancher, of Atlanta, Ga., and E. Keith Chunn, of Houston, Texas, arrived in Medellín on March 13. The physicians were invited to Colombia in the course of their visit to clinics and hospitals in Panama and in Latin-American countries. Several festivities were held in their honor. On March 15 they visited clinics and hospitals in Cali. After that they left Colombia for Ecuador and Peru.

MEXICO

New Additions to the Instituto Nacional de Cardiologia.—As the Instituto Nacional de Cardiología enters its eighth year, important additions have been undertaken, which will transform its physical plant, increase its capacity and enhance the efficiency of the work—clinical as well as research—of the institution. The space devoted to laboratories will be doubled, and a special service of cardiovascular surgery will be created, including the necessary amphitheaters; a new hospital section will contain only single rooms. A new building will be devoted to class rooms and laboratories for the school of nursing, adequate accommodations for guest physicians and lecturers and new intern's quarters.

CORRESPONDENCE

MEDICAL MYCOLOGY IN GREAT BRITAIN

To the Editor:—In a recent visit to the Medical Mycology Laboratory at the London School of Hygiene and Tropical Medicine in Great Britain, I had an opportunity to become acquainted with the problems of the medical mycologist in that country and learned of the progress which the British have made in this important field of medicine. I believe that a report on medical mycology in Great Britain would be of interest to physicians and medical mycologists in this country.

In Britain, public health laboratory workers are being called on more frequently to assist in the diagnosis of mycotic diseases than ever before. To meet this need, this world-famous laboratory of medical mycology has recently expanded its facilities for reference diagnosis and for the teaching of diagnostic methods. The department of medical mycology combines three functions: teaching, mycological reference work and the maintenance of a collection of pathogenic fungi. About 4,000 specimens are examined a year, and skin-testing agents are distributed.

In a recent work "Survey of Fungus Diseases in Britain," Dr. Roland Riddell, senior lecturer in medical mycology at the University of London, indicates that a wide variety and a considerable number of mycotic infections are being seen and recognized in Britain. As in other countries, the ringworm infections comprise the bulk of the fungus diseases. The vast majority of hair infections are of the small-spored, ectothrix type due to Microsporum species, where diagnosis is assisted by the bright yellow-green fluorescence seen under Wood's lamp. Ringworm of the anthropophilic species, Microsporum audouini, first appeared as an epidemic problem in England during World War I. The incidence decreased after this period, and in some areas the infection had almost disappeared by 1939 (Kinnear, J., and Rogers J.: *Brit. M. J.* 2:854, 1948). Its recrudescence in recent years, as in the United States, may be explained by war conditions, mass movements of children in evacuation schemes and consequent relaxation of supervision by parents and school medical staffs, which allowed the endemic condition to become epidemic. In some areas of England, particularly the southern counties, the number of scalp ringworm cases has not increased as in the midlands and the north, and infections due to M. canis, the common type of ringworm contracted from cats and dogs, are about equal in number to M. audouini infections (Walker, J.: *Brit. J. Dermat. & Syph.* 62:239, 1950). As in the United States, M. gypseum infections, also contracted from cats and dogs, are rare.

Other causes of ringworm of the scalp in Britain are Trichophyton mentagrophytes, T. faviforme, T. tonsurans and T. schoenleini. The Trichophyton species, which only rarely cause tinea capitis, are frequently missed in Wood's light surveys, as they produce a nonfluorescent type of infection. T. mentagrophytes is most frequently contracted from animals. The lesions are usually of a suppurative type and may heal spontaneously. T. faviforme is the common cause of cattle ringworm in Britain; it is especially prone to produce intractable kerionic lesions and to cause sporadic diseases of both children and adults in contact with farm animals. The endothrix species, T. tonsurans, and its varieties, particularly var. sulfureum, has been frequently isolated in Britain. The chronic nature of infections due to this organism makes its treatment a difficult problem. T. schoenleini, the causative agent of the disease favus, occurs not uncommonly in urban areas where families are living in overcrowded conditions.

Tinea pedis is prevalent among servicemen and is an important cause of invalidism among the miners of Britain. T. mentagrophytes is most commonly isolated, and Epidermophyton floccosum and T. rubrum more rarely.

T. rubrum is the commonest cause of nail infections producing intractable and destructive lesions. Groin infections are almost always caused by E. floccosum. Ringworm of other areas of the glabrous skin are due chiefly to the animal-infecting species: M. canis, T. faviforme and T. mentagrophytes.

With regard to the subcutaneous mycoses, actinomycosis is as common as in other parts of the world. The anaerobic actinomycete Actinomyces bovis, or A. israeli as many British workers designate the human pathogen, is frequently isolated from tonsillar crypts, and most strains received at the Reference Laboratory have been associated with jaw injuries. Dr. Riddell mentions two recent isolates recovered from granulomas of the lachrymal ducts. Sporotrichosis is apparently a very rare disease in Britain.

Of the systemic mycotic diseases, blastomycosis caused by Blastomyces dermatitidis has been reported only once (Dowling, G. B., and Elsworthy, R. R.: *Proc. Roy. Soc. Med.* 19: Sect. Dermat. 4-10, 1925-1926), and this occurred in a man who had been handling wood from the United States. Coccidioidomycosis, which is so prevalent in certain areas of Southwestern United States, is unknown in England except as a laboratory infection. Histoplasmosis with widespread reticuloendothelial involvement has not been reported as having been contracted in England. One case, however, in which only skin lesions were presented, was reported by Duncan (*Tr. Roy. Soc. Trop. Med. & Hyg.* 40:364,1947). It is interesting that in this case the organisms found in the tissue were unusually large. Histoplasmin skin-testing surveys have to date given negative results; an extensive survey has recently been instituted in conjunction with the Research Committee of the British Tuberculosis Association.

Cryptococcosis occurs in Britain as an unusual sporadic disease as elsewhere in the world. It most commonly causes a meningitis and is more frequently being considered in differential diagnosis.

A valuable contribution in the field of taxonomy in medical mycology, "Nomenclature of Fungi Pathogenic to Man and Animals," has recently been published by the British Medical Research Council (Medical Research Council Memorandum 23, His Majesty's Stationery Office, London, 1949).

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SODIUM ADSORBENT RESINS—WARNING

To the Editor:—With the recent release of sodium adsorbent resins by the Food and Drug Administration, I anticipated that serious difficulties would arise, since the dangers associated with resin administration are not generally known.

During the past two years, I have investigated the use of these resins in patients with kidney disease. Most emphasis in the literature, and in the information supplied by the pharmaceutical manufacturers, is placed on the danger of potassium depletion. Equally dangerous is the rapid development of acidosis in the patient whose renal function and base conservation are insufficient to compensate for the release of acid ions. The latter danger is especially pronounced in patients with diabetes mellitus and renal insufficiency. A few days of resin administration, in such patients, may produce profound hypokalemia and acidosis, which may prove fatal. This disaster may occur even with the resins that are partially in the potassium cycle.

Since public release of the resin, it has been my unfortunate experience to see in consultation one such patient who died; it is therefore urgent that the profession be warned concerning this particularly dangerous situation.

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BRUCELLOSIS

To the Editor:—In the April 14, 1951 issue of THE JOURNAL I note a very interesting editorial on "The Problem of Brucellosis." In the article it is stated that "since brucellosis is not generally transmitted from person to person, the prevention of human infection is dependent on the control and elimination of the disease in animals." The rest of the article deals primarily with this method of control and discusses the treatment of the disease. However, I can find nothing concerning the most important method of control at our disposal, which is, of course, pasteurization of all milk supplies. Naturally, I do not maintain that this is the only method of control of brucellosis that should be used, but I do think that it should always be considered in conjunction with all the other methods of control that are described in the editorial mentioned above.

In addition, I might say that, in discussing methods that may be used to control the spread of brucellosis, one should be careful to differentiate between measures designed to control bovine brucellosis in cows, bovine brucellosis in humans and porcine brucellosis in pigs. The remarks I have made concerning pasteurization of milk apply, of course, only to bovine brucellosis in humans.

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PENICILLIN TREATMENT OF SYPHILIS

To the Editor:—In THE JOURNAL of April 21, 1951 (page 1223) there appeared an article on penicillin treatment of syphilis, recommending specific treatment schedules for the various stages of syphilis. For neurosyphilis, a total dosage of 6 million units of penicillin is advocated as minimal adequate treatment. This amount may be sufficient in most patients with meningovascular syphilis. In dementia paralytica, 6 million units is an entirely inadequate dosage.

In the early days of penicillin therapy, mainly as the result of underdosing up to 5 million units, the treatment of general paralysis with the antibiotics did not give the same results as malaria therapy. Through clinicoanatomic studies, it soon became apparent that with an increasing total amount the effectiveness of the antibiotic usually (but not always) augmented, and the amount of 10 million units of penicillin was found to be about equivalent to a course of malaria fever (*Dis. Nerv. System* **10**:368 [Dec.] 1949). The occasional persistence of a few spirochetes in the brain following this amount, however, suggested that even a higher initial total dosage, possibly in the neighborhood of 15 million, may be required for maximal results.

As to the treatment of cardiovascular syphilis, the same amount, 6 million units, has been recommended. However, recent histologic studies have revealed that the inflammatory foci of the syphilitic aorta are even more refractory to therapy than are the inflammatory lesions of the general paralytic brain. Judging from the extreme resistance of the syphilitic exudate in the wall of the aorta, even a larger total dosage than the one advocated for dementia paralytica may be needed for the successful therapy of syphilitic cardiovascular disease.

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CORTISONE AND LARYNGEAL EDEMA

TO THE EDITOR:—Cortisone and pituitary adrenocorticotropic hormone (ACTH) have been shown to inhibit a wide variety of tissue reactions. An important application of this action on laryngeal edema due to a variety of causes is indicated in the following brief account. A detailed study of the cases mentioned below and others will be submitted at a later date.

At first, an attempt was made to evaluate the action of cortisone on laryngeal edema secondary to a course of protracted fractional irradiation for carcinoma of the larynx. The result was most striking in that within 11 hours the edema had noticeably diminished and within four days the edema was minimal. No antibiotic or chemotherapeutic agents had been given. A second patient with laryngeal edema of similar pathogenesis was so treated. The results were equally impressive.

Four patients with subglottic edema (croup), ranging from moderately severe to severe, were given cortisone. In two, indirect laryngoscopy could be performed without difficulty. The subglottic swelling diminished markedly in both patients within 12 to 24 hours. The two other patients were not followed laryngoscopically, but the clinical improvement within 12 hours was notable in each. All four patients received antibiotics and steam before and during the administration of cortisone.

A patient with supraglottic edema due to a hypopharyngeal abscess secondary to a foreign body was given cortisone. Within 12 hours, inspection of the larynx revealed marked diminution of the edema. Antibiotics had been given for 36 hours previously without effect.

Hospitalization was necessary for all the patients mentioned, because of impending asphyxia. Cortisone was administered in all cases but one by mouth and in full doses. Toxic effects due to fluid retention was observed in one case after prolonged administration of cortisone. This was satisfactorily controlled by diuretics.

The obvious importance of cortisone and, possibly, pituitary adrenocorticotropic hormone in the management of laryngeal edema as exhibited in the small number of cases mentioned above has prompted this early and urgent report.

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PREPARATION OF AN ULTRAFILTRABLE ACTH, EFFECTIVE IN SMALL DOSES

To the Editor:—An ultrafiltrable preparation of adrenocorticotropic hormone, effective clinically in daily doses of only 3.5 to 7 mg., has been prepared. This preparation has been used successfully in total doses not exceeding 60 to 80 mg. in the treatment of rheumatoid arthritis, purpura annularis telangiectodes (Majocchi's disease), lupus erythematosus and certain ophthalmologic conditions. No toxic manifestations have as yet been noted. A dose of 3 mg. induces a fall in eosinophils in persons with normal adrenal functions, according to Thorn's technique. The preparation is obtained by ultrafiltration of an aqueous solution of anterior pituitary powder buffered at pH 5.2. It is slightly yellow and thermostable and contains about 2.5 mg. of solid substance per milliliter. The nitrogen content is about 5 per cent of the organic substance. Amino acid analysis by paper chromatography reveals a limited number of amino acids, including aspartic acid, glutamic acid, tyrosine, glycine and alanine. These data are similar to those reported for an active ultrafiltrate obtained by Cortis-Jones and co-workers (*Biochem. J.* 46:173, 1950) with the exception of nitrogen, which, in our preparation, is present in lower quantities. In this respect, it approaches the preparation of Geshwind and co-workers (*Science* **111**:625 [June 9] 1950), which, however, was obtained from pure hormone.

The biologic activity of our preparation has been demonstrated with hypophysectomized rats and by the ascorbic acid depletion test of Sayers and co-workers (*Endocrinology* 42:379, 1948). Active preparations with a simple polypeptide structure have also been reported by C. H. Li (Conference on Metabolic Aspects of Convalescence, 1948 Transactions of the Seventeenth Meeting, New York, Josiah Macy Jr. Foundation 1949, p. 114) and by Brink and co-workers (*J. Am. Chem. Soc.* 72:1040, 1950).

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Right of Mechanotherapist to Prescribe and Administer Drugs.—The defendant, a mechanotherapist, was charged by the state medical board with using certain drugs in violation of the rules and regulations governing limited practitioners. After a hearing before a referee, the state medical board entered an order revoking the defendant's license to practice mechanotherapy. From such order the defendant appealed to the court of common pleas of Ohio, Summit County.

At the hearing before the referee an inspector for the medical board testified that he visited the defendant's office and saw bottles labeled thiamine chloride, liver extract, nupercainal, quinocaine, metycaine and otozole and a jar labeled sulphathiozole ointment. He said the defendant admitted having administered all of these preparations, some for treatment purposes and some as local anesthetics. When the inspector asked the defendant if he would discontinue the use of these remedies in his limited practice, the defendant just shrugged his shoulders.

The power to revoke a limited practitioner's license is governed by Section 1274-6 of the Ohio general code which provides in part: ". . . the board . . . may also revoke or suspend the certificate of anyone to whom a limited certificate has been issued upon proof of the violation of the rules and regulations established by the board governing such limited practice." Part of the general rules and regulations of the board governing limited practitioners is the following: "The certificate does not permit the holder to treat infectious, contagious, or venereal diseases nor to prescribe or administer drugs or to perform major surgery." The statutes (Section 1274-3) also provides, in relation to limited licenses: "Such certificate shall authorize the holder hereof to practice such limited branch or branches of medicine or surgery as may be specified therein, but shall not permit him to practice any other branch or branches of medicine or surgery nor shall it permit him to treat infectious, contagious or venereal diseases, nor to prescribe or administer drugs, or to perform major surgery."

The first principal question raised by the court was whether or not the pertinent rules and regulations of the state medical board were invalid, ultra vires or unconstitutional. The right to practice limited or unlimited branches of medicine or surgery is not an inherent or God given right, nor is it a right that once obtained is perpetual, said the court. It is a right given to someone who, because of his training, education and experience, has been found to have the qualifications to perform in his respective field, subject, however, to the laws, rules and regulations governing that right. When one is given a license to practice in a limited branch of medicine or surgery, that one impliedly agrees to conform to and abide by the laws, rules and regulations prescribed for his particular branch of medicine or surgery, the nonperformance of which will result in disciplinary measures such as suspension or revocation of license. Counsel for the defendant contended that Section 1274-1 of the Ohio General Code, authorizing the medical board to establish rules and regulations governing such limited practice, should rightly be construed to mean that the board shall have the right to establish rules and regulations only for the administration, and not for the enlarging or restricting, of the statutory laws. Did the board in this instance enlarge or restrict the statutory laws? It is to be noted, said the court, that the last paragraph of Section 1274-3 and the rules and regulations of the state medical board are practically the same. They both set out a prohibition whereby limited practitioners cannot use drugs or practice major surgery. The right given by the legislature thus canalized the board's discretion rather than leaving it unconfined. It was a proper grant under the exercise of police powers, therefore, the court concluded, the rules and regulations pertaining to the instant case are valid and not ultra vires.

The next question was whether or not the rules and the statute are invalid for indefiniteness, uncertainty and ambiguity. The defendant claims that since the term "drug" is not defined in the statute or in the rules and regulations the term then becomes vague, indefinite, uncertain and ambiguous. The term "drug" said the court, is defined under the pharmacy laws of this state. Section 1296-1, paragraph 2, is as follows: "The term 'drug' or 'pharmaceutical preparation' means (a) articles recognized in the official United States Pharmacopoeia, or official National Formulary, or any supplement to either of them, intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animals; and (b) all other articles intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animals; and (c) articles, (other than food) intended to effect the structure or any function of the body of man or other animals; and (d) articles intended for use as a component or any articles specified in clause (a), (b), or (c); but does not include devices or their components, parts or accessories." It cannot have a different and varying definition under the heading of pharmacy laws than it would have under the medical board laws. One works in conjunction with the other, as the druggist supplies the doctor, and the definition of the term "drug" should be compatible one with the other. Therefore, although the medical practice act and the rules and regulations of the state medical board do not define "drugs", the court does have the right to accept, and should recognize, the definition of that term under the pharmacy laws. The court therefore held that Section 1274-1 and 1274-3 are not invalid for indefiniteness, uncertainty or ambiguity.

Finally, the court discussed the question of whether or not the defendant, a duly licensed mechanotherapist, could use sulphathiozole ointment, metycaine, nupercainal, quinocaine or otozole in the performance of minor surgery or could prescribe or administer vitamin or liver extract. The defendant did not deny the fact that he told the inspector for the medical board that he had administered or prescribed all of these items to his patients and therefore the referee and the board had the right to accept the testimony of the inspector as the truth. Were these remedies or materials "drugs"? Dr. Sollman, who testified on behalf of the medical board, stated unequivocally that sulphathiozole ointment, metycaine, liver extract and thiamine chloride were drugs. His testimony was not rebutted. At first blush to say that a limited practitioner of medicine or surgery should not be allowed to prescribe or administer vitamins or liver extract for a physical deficiency seems rather farcical, for immediately one realizes that these items can be purchased generally without prescription. Upon meditation, however, said the court, one must necessarily conclude that this prohibition is not an absurdity, for someone in whom you place your future health and in whom you put your trust should be a person who is qualified to speak, to comprehend the nature of your deficiency and to know the necessary prescription therefor. Since defendant is a limited practitioner it is presumed that he is not qualified or versed in the use of vitamins or liver extract, even though he may well be. However, the line must be drawn somewhere, and the legislature has seen fit, from the standpoint of public safety, to say by legislation that practitioners of mechanotherapy shall not administer or prescribe drugs, regardless of their knowledge. Since the court concludes that vitamins and liver extract are drugs, such then cannot be prescribed or admintered by limited practitioners. The defendant suggested, however, that since his practice was limited only by the prohibition not to prescribe or administer drugs or perform major surgery he could, therefore, perform operations for all minor surgery. To perform various types of minor surgery it was testified that local anesthetics and antiseptics were a necessary adjunct to successful operations, and therefore defendant contended that, since he is entitled by implication to perform minor surgery and a necessary adjunct to such cases of minor surgery is local anesthetics and local antiseptics, he therefore is permitted to use them in his limited practice. The defendant is a mechanotherapist and mechanotherapy is defined as being the use of manual, physical or mechanical measures for the treatment of disease, but such physical or mechanical measures shall not include the use of x-ray or radium for therapeutic purposes. It impresses the court that the mechanotherapist is allowed to practice minor surgery, but it must be such as is accomplished by massage or other similar means, either manually or mechanically. Legislative enactments must be so construed as not to present an absurdity. Can a court conscientiously say that although the legislature has prohibited limited practitioners from prescribing or administering drugs but granted the right to practice some minor surgery, therefore the legislature did not mean what it said and that drugs can be used, since in some instances they are considered a necessary adjunct to minor surgery? This court believes that such a pronouncement would be unconscionable and erroneous, and it would be establishing a right by implication in the face of expressed legislative restriction and prohibition.

Accordingly the court concluded that a licensed mechanotherapist must not prescribe or administer drugs of any kind in performing minor surgery; that the minor surgery which he is permitted to perform must be an operation within the limits of mechanotherapy; and that vitamins and liver extract, as well as sulphathiazole ointment and metycaine, are drugs within the meaning of the statutes of Ohio. Accordingly the order of the state medical board revoking the license of the defendant to practice mechanotherapy was affirmed.—*Botkin v. State Medical Board, 96 N.E. (2nd) 215 (Ohio, 1950).*

Compensation of Physicians: Infant's Liability for Costs of Medical Services.—The plaintiff, a minor, received injuries due to the alleged negligence of the defendant. Subsequently the plaintiff's mother, as guardian ad litem, commenced an action on the infant's behalf against the defendant for injuries to the plaintiff and for medical and hospital expenses incurred. The defendant filed a motion to strike that portion of the plaintiff's complaint asking damages for medical and hospital expenses. The case was heard in the supreme court, Chenango County, New York.

The plaintiff contended that such items constitute necessaries furnished the infant for which the infant is now, or may in the future, be obligated because his mother, who works for a small daily wage, is without financial means to meet them. The defendant, however, contended that parents are liable for the expenses of hospitalization, medical, surgical, nursing care and attendance of an infant and that therefore such items form no part of the infant's cause of action and any reference thereto should be stricken from the complaint.

Under the common law, said the court, an injury to an infant due to the negligence of an alleged wrongdoer, gives rise to two causes of action. The parents upon whom rests the responsibility of supporting and maintaining the infant, have a cause of action for the loss of the infant's services, hospital, medical expenses, etc. and a cause of action accrues to the infant for damages as a result of the injuries sustained. If the parent is, or will be, of financial ability to pay such expenses, the primary responsibility rests upon him and not the infant. In fact, the infant cannot, under these circumstances, legally bind himself to pay. In such a situation, the cause of action for such expenses belongs exclusively to the parent, as he is the party who has been actually damaged in that respect. However, the court continued, an infant may become liable under certain circumstances for necessaries furnished him under an implied contract to pay therefor. The theory upon which the infant is rendered liable for necessaries is that they have been furnished and were necessary and that the person standing in the relation of parent had not the ability to respond for the amount. Medicines and medical attendance furnished to an infant when his health or physical condition require them ordinarily constitute necessaries for which he may render himself liable. This liability attaches where it appears that the parent is unable to, or at least does not, provide for the infant. In this case it is alleged, and not disputed, that the parent is financially incapable of making payment for these expenses. Under such circumstances, said the court, the infant plaintiff may be sued and held legally responsible therefor. It would be manifest injustice, the court continued, to allow an alleged wrongdoer under the circumstances here presented to escape responsibility for payment of a substantial part of the pecuniary consequences which flowed naturally and proximately from his alleged negligent acts. Accordingly the defendant's motion to strike the portion of the plaintiff's complaint relating to hospital, medical, and surgical services rendered to the infant was denied.—*Natoli v. Board of Education of City of Norwich, 101 N.Y.S. (2d) 128 (New York 1950).*

MEDICAL MOTION PICTURES

Hepaticojejunostomy Following Common Duct Injury: 16 mm., color, silent, showing time 26 minutes. Produced in 1951 by and procurable on loan or purchase from Philip Thorek, M.D., 25 East Washington St., Chicago 2.

This motion picture shows the surgical technic for an anastomosis between the proximal jejunum and the common hepatic duct. The indication for the surgical procedure in this case was obstruction of the common duct caused by injury at a previous cholecystectomy. The case history of the patient is presented. She is severely jaundiced and debilitated. Adequate preoperative preparation, because of the severe nutritional disturbances seen in many of these patients, is stressed.

The abdomen is opened through a right upper paramedian incision. Many adhesions are encountered, which makes exposure of the portahepatis difficult. After lysis of the adhesions, mobilization of the duodenum and hepatic flexure of the colon, a bulbous common hepatic duct is well exposed and demonstrated. The anatomy encountered in this region and the relation between the various structures are well shown and then amplified by means of a colored, animated illustration.

A statement is made that the intrapancreatic portion of the common duct could not be found. The technic of attempting to find it is not demonstrated. The tip of the bulbous common hepatic duct is freed of scar tissue. After accurate identification of the bulbous common hepatic duct by means of a needle aspiration of bile, the duct is opened. A loop of jejunum is brought up through the transverse mesocolon and an end to side anastomosis made between the bulbous common hepatic duct and the jejunum. The anastomosis is performed with two rows of interrupted, nonabsorbable suture. Before completing the inner row of the anterior portion of the anastomosis, the operator inserts a "T" tube into the common hepatic duct and into the jejunum. The anterior portion of the anastomosis is then completed around the long arm of the "T" tube. A colored illustration is presented to show the technic of the anastomosis. A drain is placed in the right kidney fossa and brought out through the wound along with the "T" tube.

Following operation, the patient's nutritional state improved remarkably and her icterus index, which was extremely high before surgery, dropped to almost normal after three months. The "T" tube was removed at about three months. A cholangiogram is presented which was done just prior to removal of the "T" tube, but the intrahepatic ducts are not too well demonstrated.

Almost invariably the intrapancreatic portion of the common duct can be found. If it cannot be isolated via dissection in the region of the head of the pancreas, the duodenum can be opened and a probe passed in retrograde fashion through the ampulla of Vater. By such means, the distal portion of the common duct can almost always be found. Since a good sized segment of the common hepatic duct was spared, it would have been a much better procedure to have isolated the distal common duct and to have performed a primary end to end anastomosis over a "T" tube between the isolated bulbous common duct and the distal intrapancreatic portion of the common duct.

The film might be used to supplement a lecture on repair of injuries to the common duct. Throughout most of the picture, the surgical field is not centered; otherwise, the photography is good.

MEDICAL LITERATURE ABSTRACTS

AMERICAN

A. M. A. Arch. Ophthalmology, Chicago

45:239-364 (March) 1951

Ocular Manifestations of Diffuse Collagen Disease. M. L. Stillerman. —p. 239.
Physiological Considerations of ACTH and Cortisone Therapy with Reference to Ophthalmology. S. H. Armstrong Jr. and E. N. Irons. —p. 251.
Effect of Cortisone on Horse Serum Uveitis in Rabbits. A. C. Biegel. —p. 258.
Use of Adrenocorticotropic Hormone and Cortisone in Ocular Disease. J. A. Olson, E. H. Steffensen, R. W. Smith and others.—p. 274.
Adrenocorticotropic Hormone (ACTH) and Cortisone in Ophthalmology: Report of Cases. H. G. Scheie, G. S. Tyner, J. A. Buesseler and J. E. Alfano.—p. 301.
Local Use of Cortisone in Ophthalmic Diseases. H. A. Mosher.—p. 317.
Early Clinical Results of ACTH and Cortisone Treatment of Ocular Diseases. J. R. Fitzgerald, J. G. Bellows, J. M. Donegan and others. —p. 320.
Diseases of Uveal Tract. M. J. Hogan.—p. 334.

A.M.A. Arch. Surgery, Chicago

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*Effects of Water Load Administered to Patients During Immediate Postoperative Period: Hypotonic Syndrome. I. M. Ariel.—p. 303.
*Liver as Factor in Experimental Renal Hypertension. L. Davis and C. A. Tanturi.—p. 325.
Treatment of High Intensity Burns. E. I. Evans.—p. 335.
Corrosive Injury of Stomach: Report of Case Caused by Ingestion of Clorox® and Experimental Study of Injurious Effects. D. C. Strange, J. C. Finneran, H. B. Shumacker Jr. and D. E. Bowman.—p. 350.
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Effect of Adrenoxyl on Blood Loss from Surgical Wounds. R. F. Hagerty, J. J. Zavertnik and K. S. Grimson.—p. 420.
Cause and Treatment of Pruritus Ani. C. C. Tucker.—p. 428.
Volvulus of Sigmoid Colon. H. D. Hilton and J. M. Waugh.—p. 437.
Homologous Transplantation of Tissues: Review of Literature. W. P. Longmire Jr. and S. W. Smith.—p. 443.

Postoperative Water Metabolism.—The fate of intravenously administered water was studied in 20 patients immediately following a major surgical procedure. On the day of operation each patient received an average of 3,562 cc. of distilled water containing 5 per cent glucose. Eight patients regarded as showing normal urinary excretion retained 429 cc. of this fluid in the first 24 hours, while the remaining 12 patients retained an average of 1,768 cc. This retention was only transitory, however. After three days of approximately constant fluid intake the first group showed a cumulative water retention of only 87 cc., while the second group excreted an average of 246 cc. more fluid than was administered. In the group that retained fluid initially there was no increase in the average plasma volume but the extracellular fluid increased significantly. The hypochloremia that occurred postoperatively was attributed partly to chloride excretion in the urine, which was equal in the two groups, and partly to wider distribution of the chloride ion throughout the increased intercellular fluid. The intracellular edema that resulted from dilution of the intercellular electrolytes was held responsible for the convulsions that sometimes occur postoperatively. These are rendered more likely when brain cell permeability is increased because of brain damage, severe arteriosclerosis or anoxemia. The authors have previously demonstrated that postoperative retention of fluids is not due to changes in kidney function. It has been attributed to hormonal disturbances. Therapy consists of dehydration of the patient followed by the administration of saline solution.

Role of Liver in Hypertension.—Experiments in dogs have shown that the hypertension produced by the application of Goldblatt clamps to the renal arteries can be relieved if the blood flow to the liver is reduced in a similar manner. Reduction of the blood flow in the portal vein is more effective in lowering the systemic blood pressure than total occlusion of the arterial blood supply to the liver. The reduction in systemic blood pressure does not occur immediately, which suggests an indirect mechanism. Moreover, no hypotensive effect is obtained unless the blood supply to the liver is reduced sufficiently to produce fatty infiltration of the liver cells. This pathological change in the liver may or may not be detectable by liver function tests. These experiments confirm current theories that the liver is intimately involved in the regulation of the peripheral circulation.

American Heart Journal, St. Louis

41:161-322 (Feb.) 1951

Effect of Digitoxin on Apparent Stroke Volume, Posteroanterior Cardiac Diameter, and Cardiac Cycle in Normal Subjects as Studied by Electrokymograph.,E. E. Addleman Jr., K. Willis, M. J. Greve and H. E. Heyer.—p. 161.
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*Disorders of Cardiovascular System Occurring with Catheterization of Right Side of Heart. W. T. Zimdhal.—p. 204.
Transient Right Bundle Branch Block Produced by Heart Catheterization in Man. E. Simonson.—p. 217.
Prognosis in Bundle Branch Block: II. Factors Influencing Survival Period in Left Bundle Branch Block. R. P. Johnson, A. L. Messer and P. D. White.—p. 225.
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Ventricular Complex in Esophageal Electrocardiography. L. Scherlis, J. Wener, A. Grishman and A. A. Sandberg.—p. 246.
Factors Influencing T Wave of Electrocardiogram: III. Nonchronotropic T Changes Produced by Acetylcholine. I. M. Liebow and H. K. Hellerstein.—p. 266.
Critical Rates in Ventricular Conduction: III. Simulation of Ventricular Tachycardia. H. Vesell and L. B. Kraemer.—p. 280.
Coupled Extrasystoles and Automatic Ventricular Rhythms. D. Scherf and A. Schott.—p. 291.
*Cor Triloculare Biatriatum: Analysis of Clinical and Pathologic Features of Nine Cases. H. M. Rogers and J. E. Edwards.—p. 299.

Complications of Cardiac Catheterization.—Two cases are described in which arrhythmia could be attributed to right heart catheterization. Both concerned four year old children. In one, nodal tachycardia developed with the catheter in place. The arrhythmia did not cease spontaneously after 30 minutes and was terminated by treatment. In the other patient, with a tetralogy of Fallot, complete auriculoventricular heart block developed the day after the catheter had been removed. Second degree heart block then appeared, followed by first degree auriculoventricular heart block. The electrocardiogram returned to normal in seven days. The literature is reviewed, and results in other clinics are discussed. Local and intracardiac venous thromboses, pulmonary and cerebral emboli and cardiac arrhythmias have been observed. Fortunately, these complications are usually temporary and transient. Fatal complications have been en-

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Titles marked with an asterisk (*) are abstracted.

countered rather infrequently. Catheterization of the right side of the heart has proved to be a most valuable aid in the diagnosis of congenital heart disease and in the study of other heart and pulmonary diseases. It has a place in the hands of competent investigators, but successful application of this technique requires a trained team. Its use as a casual and infrequent procedure in inexperienced hands should be discouraged.

Cor Triloculare Biatrium.—Nine cases of cor triloculare biatrium, which represent all cases of this anomaly in the collection of pathologic specimens in the Mayo Clinic, are reviewed. In eight patients there was associated transposition of the great vessels. In six of these, the outflow tract of the common ventricle was so divided as to create a narrow tract leading to the aorta. The pulmonary trunk was wide. In two other patients, a subpulmonary fibrous collar created a moderate degree of subpulmonary stenosis. In the ninth patient the great vessels were not transposed. Coarctation of the aorta was associated with cor triloculare biatrium in two patients. In one of these, tubular hypoplasia of the aortic arch between the left common carotid and left subclavian arteries also was present. Six of the patients were male, and three were female. The age at death varied from 3 weeks to 8 years. Records of physical examination were available for seven patients, and each showed a precordial systolic murmur. At times, this was associated with a precordial thrill. Cyanosis varied in degree; in several instances it was mild and became intensified only before the patient's death.

American Journal of Clinical Pathology, Baltimore

21:101-200 (Feb.) 1951

Blood Media for Cultivation of Mycobacterium Tuberculosis. M. S. Tarshis and A. W. Frisch.—p. 101.
Bone Bank: Procurement, Preparation and Storage of Accessions. H. Gordon and B. Welsh.—p. 114.
Use of Perchloric Acid as Protein Precipitant in Determination of Acid-Soluble Phosphates and Nonprotein Nitrogen in Blood. S. P. Gottfried and G. L. Erdman.—p. 118.
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Alterations in Serum Potassium and Sodium in Acute Myocardial Infarction. S. K. Wilhelm.—p. 146.
Bone Marrow in Secondary Polycythemia Associated with Cor Pulmonale. K. Braun.—p. 149.
Histoplasmosis, Cryptococcosis and Tuberculosis Complicating Hodgkin's Disease: Report of Case. R. C. Rodger, L. L. Terry and C. H. Binford.—p. 153.
*Adrenal Cortical Failure Following Treatment with Cortisone and ACTH: Report of Case. E. L. Proctor and A. J. Rawson.—p. 158.

Cortisone, ACTH and Adrenal Cortex.—A woman aged 36 with lupus erythematosus disseminatus was treated with cortisone. On the first day 300 mg. was given, 200 mg. was given on the second day and 100 mg. daily thereafter for seven days. There was temporary improvement. Treatment was discontinued, but was resumed four days later with 100 mg., given daily for 13 days. Then treatment with pituitary adrenocorticotropic hormone (ACTH) was started. The initial dose was 25 mg.; next 12 mg. was given every six hours for three days, and then 30 mg. every six hours. Treatment was discontinued after seven days. Throughout this period the patient remained very ill, with spiking fever, despite the administration of penicillin and aureomycin. The patient's condition progressively deteriorated, and she died 11 days after pituitary adrenocorticotropic hormone was discontinued. The diagnosis of lupus erythematosus disseminatus was confirmed on necropsy. The lesions of the disease were relatively inconspicuous by comparison with the pronounced damage to the adrenal cortex. Cytolytic destruction of the adrenal cortex, with changes most pronounced in the fascicular zone, was attributed to the use of cortisone immediately followed by pituitary adrenocorticotropic hormone. The pronounced adrenal atrophy known to occur with the administration of cortisone doubtless produced an acute need for cor- [illegible]eroids, particularly for those of the fascicular and reticu- [illegible]. The sudden stimulation of the adrenal cortex by pituitary adrenocorticotropic hormone could under these circumstances have produced a holocrine type of response resulting in cytolysis that was most pronounced in the fascicular zone.

American Journal of Physiology, Baltimore

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Effect of Anoxia on Response of Isolated Intestine to Various Drugs and Enzyme Inhibitors. T. C. West, G. Hadden and A. Farah.—p. 565.

American Journal of Psychotherapy, New York

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Public Education in Psychiatry: Is it Possible? Is it Desirable? C. Binger.—p. 4.
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Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

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*Supraspinatus Tendinitis: Survey of 300 Consecutive Cases Treated by Roentgen Therapy. O. T. Steen and J. A. L. McCullough.—p. 245.
Practical Physical Aspects in Use of Radioactive Cobalt 60 as Radium Substitute. I. Meschan, R. R. Edwards and P. J. Rosenbaum.—p. 255.
Effect of Variation in Dosage Rate of Roentgen Rays on Survival in Young Birds. S. P. Stearner.—p. 265.
Effect of Over-All Time of Exposure upon Survival of Young Chicks Following Roentgen Irradiation. S. P. Stearner and E. J. B. Christian. —p. 272.

Supraspinatus Tendinitis Treated by Roentgen Therapy.—Supraspinatus tendinitis has been described under a multiplicity of terms, such as subacromial or subdeltoid bursitis, periarthritis or para-arthritis of the shoulder, peritendinitis calcarea, calcifying tendinitis or supraspinatus syndrome. The presenting symptoms are pain in the shoulder and limitation of movement. Roentgenographic examination reveals calcium deposits along the supraspinatus tendon and in the overlying bursa. It is believed that the role of trauma in the etiology of the condition has been overemphasized. The increasing incidence of the disease during the later decades of life is in keeping with the degenerative nature of the process. In 300 cases of supraspinatus tendinitis, roentgen therapy was employed. The initial course of roentgen therapy consists of four consecutive daily applications of 150 r (measured in air without back scatter) directed to the point of maximum tenderness through a 10 by 10 cm. port at 50 cm. target skin distance with a beam generated at 200 kv. and filtered through 0.5 mm. cu. plus 1 mm. aluminum. The acute signs and symptoms will frequently subside with a single course of treatment. If some symptoms persist in the more chronic type, a further course of treatment may be given. The patient should be told that some aggravation of symptoms may occur following the first treatment. He should also be cautioned against the use of counterirritants or other applications on the area treated, as intense skin reactions may result. In view of the degenerative condition of the tendon fibers underlying the inflammatory reaction, complete cure is rarely attained, but favorable results were obtained in 251 of the 300 cases (83.6 per cent). Of the 171 patients who answered a follow-up questionnaire, 151 (89 per cent) obtained favorable results. Patients who had received other types of treatment prior to roentgen therapy responded less favorably.

American Surgeon, Atlanta, Ga.

17:97-174 (Feb.) 1951

Duodenocolic Fistula from Advanced Carcinoma of Transverse Colon. Massive Palliative Resection. F. E. Kredel.—p. 99.
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Determination of Tensile Strength of Wounds in Vivo: Preliminary Report. R. W. Postlethwait, H. H. Bradshaw and R. W. Williams.—p. 118.
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Hemorrhoid Therapy with Minimal Discomfort. D. L. Maguire Jr.—p. 132.
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Aureomycin Treatment of Rectal Strictures. L. Banov Jr.—p. 143.
Indications for Various Methods of Prostatectomy. K. M. Lynch Jr.—p. 150.
*Early Diagnosis of Carcinoma of Lung. E. F. Parker.—p. 156.

Diagnosis of Carcinoma of Lung.—There is nothing characteristic about the symptoms of carcinoma of the lung. The most common symptoms are cough, hemoptysis, fatigue, shortness of breath, a sensation of inability to get a deep breath, wheezing in the chest, pain in the chest and fever. Suspicion of carcinoma is justified when an unexplained cough persists for six weeks or longer in a person who has reached the cancer age. In addition to the history and physical examination, the following methods are helpful in the diagnosis of carcinoma of the lung: fluoroscopy of the chest, x-rays of the chest in two or more planes, bronchoscopy, examination of the sputum for tumor cells, examination of bronchial aspirations for tumor cells, bronchography, biopsy of lymph nodes to which it has spread, examination of pleural fluid for tumor cells, biopsy of the pleura without exploratory thoracotomy, biopsy of the lung, exploratory thoracotomy and autopsy. These methods are evaluated, and pertinent case reports are presented. Parker feels that it cannot be emphasized too strongly that exploratory operation must come into increasing use as a method of diagnosis in those patients with pulmonary disease in whom the presence of carcinoma cannot be excluded and in whom no other disease can be proven to account for the clinical picture. In 18 exploratory operations nine patients (50 per cent) were found to have carcinoma. In the remaining nine cases, there were found aortic aneurysm in three, tuberculosis of the pleura and lung in two and organizing pneumonia, lung abscess, actinomycosis and intrathoracic goiter in one case each. In the cases of lung abscess, actinomycosis and goiter, excision of the lesion was the preferable treatment, so that the number of cases in which operation was proven to be justified was raised to 12 (66 per cent), even though resection was not possible in all the cases of carcinoma.

Annals of Internal Medicine, Lancaster, Pa.

34:311-558 (Feb.) 1951

Treatment of Polycythemia Vera with Radioactive Phosphorus. B. K. Wiseman, R. J. Rohn, B. A. Bouroncle and W. G. Myers.—p. 311.
*Methyl Alcohol Poisoning. A. H. Keeney and S. M. Mellinkoff.—p. 331.
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Responses of Abnormal Arterial Circulation to Various Stimuli, as Studied by Use of Radioactive Sodium: II. Intraarterial Histamine, Papaverine, Aminophylline and Adrenaline; Sympathectomy and Etamon; Pain. I. Mufson.—p. 428.
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Typhus at Belsen: II. Clinical Course of Epidemic Typhus in Persons Who Had Received Craigie Typhus Vaccine. W. A. Davis.—p. 448.
Liver and Spleen Visualization by Simple Roentgen Contrast Method. S. Zelman.—p. 466.

Methyl Alcohol Poisoning.—The occurrence of methyl alcohol poisoning is reported in 23 soldiers or merchant seamen who had been drinking Korean sake. Samples of this beverage were examined and observed to contain 16 per cent methyl alcohol. The first five of these patients died of respiratory arrest after several hours of coma. The sixth patient was brought to the hospital in profound shock and died within four hours. Necropsy was performed in these six cases, and the essential pathologic findings were as follows: the brains showed edema and hyperemia; varying degrees of gastritis were observed in all cases, and multiple acute duodenal ulcers in one; the lungs uniformly showed varying degrees of congestion, edema, patchy atelectasis and frothy debris within the bronchial passages; the kidneys in four cases showed marked congestion of the glomerular tufts and cloudy swelling of the convoluted tubes; five of the livers were grossly fatty and microscopically contained lipoid vacuoles. The pancreas was affected in only one instance. The remaining 17 patients were managed with primary attention to acidosis. In this group there was only one death and no blindness or residual visual impairment. Ten, with only mild symptoms of intoxication and urinary pH's of 5.5 had negative blood methanol reactions and no acetonuria. These patients were treated with 6 Gm. of sodium bicarbonate every two hours. Each of these men returned to duty the following morning and none had sequelae. Four other patients, with mild epigastric discomfort and moderate acidosis but negative methanol blood determinations were hospitalized for a period of two days. Urinalysis was done every two hours, and sodium bicarbonate was given orally in doses of 6 to 8 Gm. every two hours. The patients were encouraged to eat heartily, and fluids were forced by mouth. All acetonuria permanently disappeared within 10 hours after admission, and hyperemia (2 +) of the disks, observed in only one patient, disappeared by the second day. Three patients with serious acidosis, blurring of central vision and marked congestion of the optic disks were hospitalized with blood methanol levels of 5, 12 and 39.7 mg. per 100 cc. respectively. Urinary pH ranged between 3.5 and 5.0. All showed acetonuria (3 + or 4 +). Gastric lavage was performed in each case, and sodium bicarbonate was given hourly by Levine tube until the patients were sufficiently cooperative to take the drug by mouth. It is noteworthy that in one patient acetonuria disappeared following each daily glucose infusion for three days, only to return each night when only sodium bicarbonate was being given, and no glucose was being administered. The two basic mechanisms of poisoning are direct chemical irritation of tissues and systemic acidosis. The former is influenced by the unlimited miscibility of methanol with water and the distribution of water in the tissues of the body. Acidosis is the most important therapeutic consideration. Alkalinization should be prompt and vigorous. It is suggested that intravenously administered glucose may be an important adjunct to treatment.

Treatment of Chronic Blood Donor Anemia.—Studies were made of 11 men between the ages of 34 and 57 with severe anemia caused by multiple blood donations. One of the patients had sold his blood approximately 24 times in one year, and similar histories were subsequently elicited from the other patients. Four patients had respiratory complaints. Severe weakness was the chief complaint of the remaining seven patients, and it was accompanied by dizziness in three and fainting spells in three. The anemia was characterized by hypochromia, low plasma iron levels, absence of appreciable reticulocytosis and, in most patients, by microcytosis. These observations suggested exhaustion of body iron stores. Iron therapy by mouth (from 0.4 to 3.0 Gm. of ferrous sulfate daily) produced dramatic responses. A high protein diet alone was ineffective but, when given in conjunction with iron, accelerated hemoglobin regeneration in some cases.

Ion Exchange Resins in Congestive Cardiac Failure.—Seven patients with chronic edema of cardiac origin were treated with ion exchange resins. The cation exchanger used in this study was a carboxylic resin in the hydrogen cycle. It is a fine, whitish insoluble powder of a sandy consistency and without any unpleasant odor or taste. Two heaping teaspoonfuls of the resin were administered three times daily in water. Since the resin prevents absorption of sodium into the body, rather than removing excessive tissue sodium, it is necessary to use the drug for prolonged periods and, in addition, to continue at least for a time administration of diuretics for promoting excretion of sodium. The resins have the advantage of allowing a patient to eat a more normal diet, free from the monotony of extreme sodium restriction, and the mercurial diuretics can be spaced more widely, thus reducing the number of injections. Three patients refused to continue the treatment because of intolerable burning in the stomach or because of repugnance to the dose. Four patients, who were able to take the drug for periods of two weeks to several months, showed some improvement, dramatic in at least one of them. Results were sufficiently encouraging in patients with so-called "irreversible" congestive failure no longer responsive to orthodox drugs to merit further study. The drug may also prove to be useful in patients who have recurrent free fluid in pleural or abdominal cavities, in patients who, because of their home conditions or because they have restaurant meals, are unable to adhere to a truly low sodium diet, in the severe hypertensive who is psychologically unfit for a low sodium diet or is unable to obtain it and in the cirrhotic patient with hepatic failure and edema.

Cancer Research, Chicago

11:73-152 (Feb.) 1951

Growth Characteristics of Free Tumor Cells Transferred Serially in Peritoneal Fluid of Mouse. H. Goldie and M. D. Felix.—p. 73.
Changes in Cell Morphology and Histochemistry of Testis Following Irradiation and Their Relation to Other Induced Testicular Changes: II. Comparison of Effects of Doses of 1,440 r and 5,050 r with 300 r. L. C. Fogg and R. F. Cowing.—p. 81.
Chemical Alterations Induced in Mouse Liver Following Single Feeding of Carbon Tetrachloride. K. K. Tsuboi, R. E. Stowell and C. S. Lee. —p. 87.
Spontaneous Gastric Neoplasia in Mice of Br-S Strain: Incidence and Genetic Linkage Tests. L. C. Strong and W. F. Hollander.—p. 94.
Studies on Formation of Protein-Bound Derivatives of 3,4-Benzpyrene in Epidermal Fraction of Mouse Skin. E. C. Miller.—p. 100.
Anti-Leukemic Action of Combinations of Certain Known Anti-Leukemic Agents. H. E. Skipper, J. B. Chapman and M. Bell.—p. 109.
Neoplasms in Rats Treated with Pituitary Growth Hormone: IV. Pituitary Gland. A. A. Koneff, H. D. Moon, M. E. Simpson and others.—p. 113.
Phosphorylated Intermediates in Glycolysis of Analogous Mouse Mammary Tumors: I. Mouse Mammary Tumors of dba and C3H Strains. A. Goldfeder and H. G. Albaum.—p. 118.
Effects of Injections of Lyophilized Normal and Neoplastic Mouse Tissues on Growth of Tumor Homoiotransplants in Mice. N. Kaliss and G. D. Snell.—p. 122.
Effect of Tumors on Antibody Levels in Mice. D. R. A. Wharton, G. L. Miller, M. L. Wharton and others.—p. 127.
Effect of Foster Nursing on Growth of Transplantable Tumor. M. K. Barrett and M. K. Deringer.—p. 134.
Vascularity of Normal and Neoplastic Grafts in Vivo. R. G. Williams. —p. 139.
Observations on Inhibition of Nucleic Acid Synthesis Resulting from Administration of Nitrogen Mustard, Urethane, Colchicine, 2,6-Diaminopurine, 8-Azaguanine, Potassium Arsenite, and Cortisone. H. E. Skipper, J. H. Mitchell Jr., L. L. Bennett Jr. and others.—p. 145.

Diseases of Chest, Chicago

19:125-248 (Feb.) 1951

*Surgical Repair of Mitral Insufficiency. (Preliminary Report). C. P. Bailey, T. J. E. O'Neill, R. P. Glover and others.—p. 125.
Serum Concentrations of Para-Aminosalicylic Acid (PAS) Produced by Various Forms of PAS. D. K. Duncan, D. T. Carr, K. H. Pfuetze and M. H. Power.—p. 138.
Pathology of Tuberculosis Treated with Streptomycin: Review of 34 Cases. O. Auerbach, L. Weiss and G. N. Stemmermann.—p. 145.
Effect of Heat on Streptomycin and Para-Aminosalicylic Acid in Tuberculosis Culture Medium. M. C. Drummond, G. T. Lewis and M. M. Cummings.—p. 158.
*Spontaneous Rupture of Esophagus. M. E. Flipse.—p. 165.
Diffuse Bilateral Fibrocystic Disease of Lungs (Honey-Comb Lungs). L. Hyde, B. Hyde and C. Pokorny.—p. 190.
Bronchogenic Carcinoma Masked by Pulmonary Tuberculosis: Case Report. J. R. Phillips and J. W. Morrison.—p. 201.
Mediastinal Teratoma. F. T. Fralick and H. S. Welsman.—p. 209.
Cysts of Pleura. W. L. Craddock.—p. 221.
Case of Plasmacytoma of Lung. M. Kuley and O. Kuntman.—p. 227.
Obstructions of Superior Vena Cava. L. H. Ferguson Jr. and W. A. Werner.—p. 234.

Surgery in Mitral Insufficiency.—Bailey and co-workers have developed a surgical technique that is immediately effective in controlling serious mitral regurgitation of either pathologic or surgical origin. This consists of the insertion of a pedicled pericardial graft with intact blood and nerve supply completely through the left ventricle in such a way as to form a flap or sling valve that tamponades the mitral orifice at each ventricular systole. The graft must lie close to the valve orifice, must be reasonably loose and preferably running accurately through the network of the chordae tendinae grouped at either extremity of the mitral slit. After preliminary animal experiments the method was applied to seven patients with pronounced mitral regurgitation. All had single valve lesions, and all were in a state of complete cardiac compensation prior to surgery. In two of the patients, who had both mitral stenosis and insufficiency, commissurotomy to relieve the stenosis was the first step in the operative procedure. The operation was considered successful in six of the seven patients, since the regurgitant leak palpable by the finger placed in the heart was diminished by at least 75 per cent. In three patients the leak was considered to be completely controlled. In one patient there was little or no control of the regurgitation, probably because of improper placement of the graft. There were no deaths. More time is necessary to permit conclusions on the permanent effectiveness of such grafts.

Spontaneous Rupture of Esophagus.—The occurrence of spontaneous rupture of the esophagus is reported in two men aged 43 and 68. Both patients died, one 24 hours after the onset of excruciating pain in the upper abdomen and subxiphoid area, the other 10 days after the onset of moderately severe substernal pain. Diagnosis was made on necropsy. Only 13 of the approximately 100 patients with spontaneous rupture of the esophagus listed in world literature have survived. This rupture is due to an increase in intraesophageal pressure greater than the tensile strength of the esophagus. Increased intraesophageal pressure is due to the transmission of increased intra-abdominal pressure by the stomach contents through the cardia into the esophagus. Rupture is made more likely by distention of the stomach with food or fluid and by obstruction of the esophagus. Obstruction is usually physiological, produced by the complex anatomical make-up of the esophagus and by incoordination of the complex vomiting reflex. Esophagitis, simple ulcer of the esophagus and esophagomalacia weaken the esophagus and so predispose to rupture. Rupture is seen chiefly in association with vomiting and/or retching, alcoholism and diseases of the central nervous system. There is usually a linear tear in the lower third of the esophagus that leads to the rapid development of mediastinitis and/or hydropneumothorax. The 70 per cent mortality rate in the first 24 hours is due to the violence of the mediastinitis and pleuritis and to the interference with cardiorespiratory function from mechanical compression. The clinical picture of spontaneous rupture of the esophagus varies somewhat, depending on whether it occurs in a previously normal person or in a neurosurgical patient. In the former, symptoms come on after vomiting and/or retching and consist of sudden chest pain, collapse, respiratory distress, upper abdominal rigidity and later subcutaneous emphysema. In postcraniotomy patients, vomiting of blood occurs during recovery from anesthesia; consciousness is lost, and there is progressive restlessness, cyanosis and dyspnea, with increasing temperature, pulse and respiratory rates. Definite diagnosis can be made by the roentgenologic observation of the passage of radio-opaque mediums through the rent into the mediastinal and pleural spaces or by aspiration of stomach contents from the pleural space. Mediastinal emphysema, rapidly accumulating hydrothorax and a retrocardiac air bubble and fluid level are suggestive roentgenologic findings. The correct antemortem diagnosis might have been made in the author's second patient, representing an example of spontaneous rupture due to esophagomalacia secondary to cerebral arteriosclerosis, had the significance of the progressive widening of the mediastinal shadow been appreciated. Prompt transpleural repair of the rent is the method of choice in early cases of spontaneous rupture of the esophagus. In the rest, drainage of mediastinal and pleural spaces is indicated. The most important of the supportive measures are the decompression of any tension pneumothorax or high pressure mediastinal emphysema and antibiotic therapy.

Florida Medical Association Journal, Jacksonville

37:475-534 (Feb.) 1951

Modern Psychiatry from the Practitioner's Standpoint. L. S. Selling. —p. 491.
Fatal Aplastic Anemia Associated with Mesantoin: Report of Case with Autopsy. S. *Stillman*, S. G. Bedell and D. Leavitt.—p. 496.
Review of Antibiotics in Treatment of Diseases of Chest. A. Libow. —p. 498.
Causes of Embolism. D. E. Hallstrand.—p. 503.

37:539-610 (March) 1951

Recurrent Nonspecific Pericarditis. W. Stamps.—p. 555.
A Physician's Place in His Community. C. E. Tribble.—p. 558.
Case of Tetralogy of Fallot with Both Coronary Arteries Arising from the Pulmonary Artery. J. W. Williams, W. S. Johnson and J. R. Boulware Jr.—p. 561.
Cytologic Diagnosis of Cancer: Method of Papanicolaou. M. M. Sayet. —p. 563.

Gastroenterology, Baltimore

17:133-326 (Feb.) 1951

Hysterical Abdominal Proptosis. N. J. Roussak.—p. 133.
Electrophoretic Serum Protein Fractions in Hepatobiliary Disease. H. Popper, W. B. Bean, J. de la Huerga and others.—p. 138.
One Hundred Cases of Carcinoma of Pancreas: Clinical and Roentgenologic Analysis. T. R. Broadbent and H. D. Kerman.—p. 163.
Effect of Banthine on Central Nervous System. L. M. Asher and S. Cohen.—p. 178.
"Latent" Portal Cirrhosis. W. E. Ricketts and J. B. Kirsner.—p. 184.
Squamous Cell Carcinoma of Rectum. S. D. Kron, H. A. Wurzel and R. J. Chodoff.—p. 194.
Experimental and Preliminary Clinical Study of Effect of New Quarternary Amine, Banthine, upon Human Colon. F. Kern Jr., T. P. Almy and N. J. Stolk.—p. 198.
Studies of Portal Venous System by Injection Technique. R. O. Holmes and W. V. Lovitt.—p. 209.
Clinical Evaluation of Bentyl Hydrochloride, New Antispasmodic. D. T. Chamberlin.—p. 224.
Turbidimetric Studies of Serum Colloids in Diabetes Mellitus. J. Pomeranze.—p. 226.
Comparative Study of Colloidal Red, Thymol Turbidity and Cephalin-Cholesterol Flocculation Tests. C. R. McIntire, R. D. Pickett, B. D. Rosenak and R. H. Moser.—p. 231.
*Insulin Tolerance Test in Cirrhosis of Liver. S. O. Waife, L. O. Brenner and C. M. Thompson.—p. 236.
Use of Secretin Test in Diagnosis of Biliary Tract Disease: Report of 327 Case Studies. D. A. Dreiling and J. J. Lipsay.—p. 242.
Effect of Interrupting Blood Flow on Gastric Potential and HCl Secretion. F. E. Coy Jr., F. J. Bajandas, T. P. de Graffenreid II and W. S. Rehm.—p. 260.

Insulin Tolerance Test in Cirrhosis of Liver.—When insulin is administered to normal subjects glycogenolysis in the liver is accelerated, so that the blood sugar is maintained at normal levels. Since the damaged liver in cirrhosis is partially depleted of glycogen, it seemed to Waife and associates that the glycemic response to a small dose of insulin might (1) test that organ's ability to maintain normal levels of blood sugar, i. e., a test for a specific liver function, and (2) throw some light on the role of the liver in carbohydrate metabolism. The standard insulin tolerance test was performed on 16 patients with advanced cirrhosis of the liver. Regular insulin was administered intravenoulsy in a dose of 0.1 unit per kilogram of body weight. Venous blood was drawn at 0, 15 or 20, 30, 45, 60, 90, and 120 minutes after the insulin had been given following an overnight fast preceded by a high carbohydrate intake the day before. The insulin tolerance test was performed also on seven convalescing patients, who had no evidence of liver disease, on four patients with psychosis and on a healthy active woman after she had been fasting for 20 and 40 hours. The mean of the 16 cirrhotic insulin tolerance curves was abnormal. In the first part of the curve there is evidence that cirrhotic patients are "insulin resistant." Hypoglycemic unresponsiveness characterizes the later part of the curve; that is, cirrhotic patients tend to have a definite flattening of the blood sugar response to insulin. Although the four psychotic patients had normal insulin sensitivity the mean curve shows a tendency to hypoglycemic unresponsiveness. Starvation was found to cause some insulin resistance. This suggests that the insulin resistance of cirrhotic persons may be due to what is essentially a state of starvation, because of impaired utilization of foods even in the presence of an adequate oral intake, and that the hypoglycemic unresponsiveness is unrelated to glycogen stores. The authors feel that the relatively wide scatter in curves unrelated with the clinical picture makes this test not specific enough for prognostic use.

Georgia Medical Association Journal, Atlanta

40:41-94 (Feb.) 1951

Treatment of Intractable Dysmenorrhea by Presacral Sympathectomy. A. L. Evans and O. S. Cofer.—p. 41.
*Diagnosis and Preoperative Management of Congenital Esophageal Atresia and Tracheo-Esophageal Fistula. O. A. Abbott and W. A. Hopkins. —p. 44.
Fasciotomy in Treatment of Gravitational Leg Ulcers. C. K. Wall.—p. 59.
Lesions of Shoulder. P. L. Rieth.—p. 69.
Melanoma. I. H. Trincher, R. L. Brown and E. L. Bishop.—p. 70.
Chloromycetin in Infectious Mononucleosis. R. F. Payne and F. Crenshaw.—p. 75.
Present Status of Management of the Rh-Negative Pregnant Woman. W. H. Browne.—p. 76.

Congenital Esophageal Atresia and Tracheoesophageal Fistula. —Congenital abnormalities of the trachea and esophagus are no longer considered a rarety. Twenty infants, 15 male and five female, are reported on, of whom 17 had congenital tracheoesophageal fistulas associated with esophageal atresia. An H-type of fistula between the esophagus and trachea without associated atresia of the esophagus was observed in three patients. The diagnosis was made 24 hours after birth in two patients, during the second day of life in five patients and between the seventh and tenth day of life in 13 patients. Diagnosis may usually be made by the passage of a soft rubber catheter under fluoroscopic vision; contrast mediums need rarely be used and, if used, consist only of 0.5 to 1 cc. of iodized oil (lipiodol®). In about half the patients cyanosis and breathing difficulty was noted at birth. Salivation was a prominent symptom in all patients over 24 hours old. Secondary pulmonary complications, such as atelectasis and pneumonia, made the pulmonary pathology the outstanding symptom with increase in age of the infant. Eight of the 20 patients had coincident anomalies, such as imperforate anus, tetralogy of Fallot and duodenal atresia. In three of these patients the associated anomalies precluded any chance of survival. Most of the patients were operated on approximately 24 hours after the diagnosis was made. The chances of survival decrease in proportion to the delay in diagnosis and the degree of secondary pulmonary contamination. With improvement in the authors' methods of preoperative preparation and operative technique nine of the last 12 patients operated on could be saved. Bigger's principle of gastrostomy as a method of deflation of the gastrointestinal tract may prove to be a valuable adjunct to direct attack on the fistula 24 hours later. Primary end to end anastomosis according to Haight's method should be performed only when the situation appears completely satisfactory for this procedure. The methods suggested by Levin and Ladd should be utilized in those instances wherein a direct anastomosis is not possible. The authors do not feel that a diagnosis of tracheoesophageal fistula with esophageal atresia indicates an emergency operative procedure. If any evidence of pulmonary disease is present they prefer to use 12 to 24 hours for preparatory measures, including treatment with antibiotic drugs. In patients in whom diagnosis is made within the first 48 hours of life and in whom the pulmonary status appears normal, immediate operation is indicated.

Geriatrics, Minneapolis

6:1-72 (Jan.-Feb.) 1951

Hypoadrenocorticism in Alcoholism and Drug Addiction. H. W. Lovell *and* J. W. *Tintera*.—p. 1.

Arteriectomy for Arterial Obstruction in Extremities. N. Shnayerson. —p. 12.

Steroid Hormones in Geriatric Practice. J. L. DeCourcy and C. B. DeCourcy.—p. 28.

Manifestations of Psychoneuroses Occurring in Later Life. H. E. Clow and E. B. Allen.—p. 31.

Some Basic Principles of Geriatric Anesthesia. M. L. Bernstine.—p. 40.

Better Bread as Source of Protein and Calcium for the Aged. C. M. McKay.—p. 45.

Indiana State Medical Assn. Journal, Indianapolis

44:93-172 (Feb.) 1951

Potentialities and Limitations of Sympathetic Nerve Surgery. H. B. Shumacker Jr.—p. 113.

Treatment of Sterility. S. L. Israel and L. L. Weber.—p. 119.

Rabies in Indiana: Human Case. J. W. Jackson.—p. 123.

Full Term Abdominal Pregnancy with Delivery of Living Child. E. L. C. Broomes.—p. 127.

International Journal of Leprosy, New Orleans

18:451-570 (Oct.-Dec.) 1950. **Partial Index**

*Thiosemicarbazone (TB-1) in Treatment of Leprosy: Preliminary Communication. M. Vegas, J. Convit, J. A. Medina and E. de Blomenfield.—p. 451.

Sulfone Treatment of Tuberculoid Leprosy. J. Lowe.—p. 457.

Treatment of Leprosy with Chloramphenicol: Experimental Trial with Negative Results. V. Pardo-Castello, F. Trespalacios, F. R. Tiant and others.—p. 469.

Interpretation of Calcium Protein Findings in Sera of Lepra Reaction Cases by Means of McLean-Hastings Equation. E. M. Paras.—p. 473.

Modifications of Lepromin Reactions. D. G. Basombrio, J. C. Gatti, J. E. Cardama and C. V. Colombo.—p. 481.

Reactions to Lepromin in Man: I. Suggestion of Possible Desensitization of Early Reaction. H. W. Wade.—p. 487.

Lesions Provoked in Wild Rat by Inoculation of Hansen Bacillus: Histologic Study. R. Noël and M. S. Soeur.—p. 493.

Amithiozone in Leprosy.—At the Cabo Blanco leprosarium in Venezuela, amithiozone (thiosemicarbazone, TB-1) is being tried in the treatment of leprosy. So far, 42 patients have been treated for periods of three to six months (March to September 1950). The initial results indicate considerable therapeutic activity. There was notable clinical regression of leprous lesions. No manifestations of intolerance were observed, and no blood changes or disturbances of the liver or other viscera occurred. The authors believe that much benefit may be derived from the application of amithiozone in the treatment of leprosy.

Journal of Aviation Medicine, St. Paul

22:1-86 (Feb.) 1951

Medical Aspects of "Operation Vittles." R. D. Nauman.—p. 4.

Relation of Circulatory Rate to Aeroembolism and Aeroemphysema. J. W. Wedral and A. C. Ivy.—p. 13.

Studies in Diffusion Respiration. T. Shires and S. W. Eyer.—p. 22.

Significance of Loss of Blood Volume into Limbs During Pressure Breathing. J. P. Henry.—p. 31.

Human Decelerator. H. M. Sweeney.—p. 39.

Human Tolerance to Deceleration: Summary of 166 Runs. J. P. Stapp. —p. 42.

The Navy Ejectable Cockpit. J. C. Early.—p. 46.

Biochemical and Blood Pressure Changes in Goats Under Negative G (Acceleration Tailward). R. S. Pogrund, S. W. Ames and C. F. Lombard.—p. 50.

Effect of Increased Positive Radial Acceleration upon Perceptual Speed Ability. A. L. Comrey, A. A. Canfield, R. C. Wilson and W. S. Zimmerman.—p. 60.

Typical Navy Flight Surgeon. J. Dunlap and W. E. Kellum.—p. 65.

Photoelectric Hypoxia Warning Device. K. Kramer, D. E. Timmons and H. Mayne.—p. 70.

Journal of Clinical Investigation, Cincinnati

30:1-124 (Jan.) 1951

Nature of Circulating Thyroid Hormone in Graves' Disease. I. N. Rosenberg.—p. 1.

Mechanism of Hemolysis in Paroxysmal Cold Hemoglobinuria: I. Role of Complement and Its Components in Donath-Landsteiner Reaction. W. S. Jordan Jr., L. Pillemer and J. H. Dingle.—p. 11.

Id.: II. Observations on Behavior and Nature of Antibody. W. S. Jordan Jr., L. Pillemer and J. H. Dingle.—p. 22.

Direct Action of Vitamin B_{12} upon Human Bone Marrow: *Effect of* Instillations of Vitamin B_{12} and Folic Acid into Bone Marrow as Studied by Nucleic Acid Staining Techniques. D. Horrigan, T. Jarrold and R. W. Vilter.—p. 31.

Neural Mechanisms Involved in Itch, "Itchy Skin," and Tickle Sensations. D. T. Graham, H. Godell and H. G. Wolff.—p. 37.

Effect of Oral Administration of Calcium Fructose Diphosphate on Serum Organic Phosphate, Inorganic Phosphate, Calcium, Protein, and Citric Acid Levels. S. Natelson, M. Klein and B. Kramer.—p. 50.

Clinical Determination of Protein-Bound Iodine. S. B. Barker, M. J. Humphrey and M. H. Soley.—p. 55.

Studies of Antidiuresis of Quiet Standing: Importance of Changes in Plasma Volume and Glomerular Filtration Rate. F. H. Epstein, A. V. N. Goodyer, F. D. Lawrason and A. S. Relman.—p. 63.

Studies in Glycine-2-C^{14} Metabolism in Man: I. Pulmonary Excretion of $C^{14}O_2$. N. I. Berlin, B. M. Tolbert and J. H. Lawrence.—p. 73.

Effect of Platelet Extract on Hemophilic Blood. E. Mond and K. Singer. —p. 77.

Peptidase Activity in Leucocytes, Erythrocytes and Plasma of Young Adult and Senile Subjects. K. Stern, M. K. Birmingham, A. Cullen and R. Richer.—p. 84.

Effect of Bilateral Stellectomy upon Cerebral Circulation of Man. H. A. Shenkin, F. Cabiescs and G. van den Noordt.—p. 90.

Effect of Venous and Arterial Occlusion, and Sympathetic Nerve Tone, on Digital Blood Flow. M. Mendlowitz, A. S. W. Touroff and H. A. Abel.—p. 94.

Chemical, Clinical, and Immunological Studies on Products of Human Plasma Fractionation: XL. Quantitative Separation and Determination of Protein Components in Small Amounts of Normal Human Plasma. W. F. Lever, F. R. N. Gurd, E. Uroma and others.—p. 99.

Proteolytic Enzymes and Platelets in Relation to Blood Coagulation. B. L. Travis and J. H. Ferguson.—p. 112.

Journal Nat. Cancer Inst., Washington, D. C.

11:239-452 (Oct.) 1950. **Partial Index**

Study of Golgi Material and Mitochondria in Malignant and Benign Prostatic Tissue. A. E. Bothe, A. J. Dalton, W. S. Hastings and F. O. Zillessen.—p. 239.

Observations on Effect of Thymectomy on Spontaneous Leukemias in Mice of High-Leukemic Strains, RIL and C58. L. W. Law and J. H. Miller.—p. 253.

Relation of Lethal Yellow (A^y) Gene to Pulmonary Tumor Formation and Obesity in Inbred Strain of Mice. W. C. Morgan.—p. 263.

Action of Bacterial Toxins on Tumors: VIII. Factors in Their Use for Cancer. P. A. Zahl.—p. 279.

Partition of Radiophosphorus (P^{32}) in Blood, Urine, and Tumor Tissue in Patients with Hodgkin's Disease and Lymphosarcoma Before and After Treatment with Nitrogen Mustard (Methyl Bis [Beta-Chloroethyl] Amine). S. P. Masouredis, B. V. A. Low-Beer, H. R. Bierman and others.—p. 289.

Ascorbic Acid, Dehydroascorbic Acid, and Diketogulonic Acid of Transplanted Melanomas and of Other Tumors of Mouse. H. M. Dyer *and* H. E. Ross.—p. 313.

Studies on Mechanism of Action of Chemotherapeutic Agents in Cancer: IV. Relationship of Guanine and Guanylic Acid to Action of Guanazolo on Lymphoid Tumors in Mice and Rats. A. Goldin, E. M. Greenspan and E. B. Schoenbach.—p. 319.

Production of Malignancy in Vitro: XII. Further Transformations of Mouse Fibroblasts to Sarcomatous Cells. K. K. Sanford, W. R. Earle, E. Shelton and others.—p. 351.

Transplantation Studies on Induced Fibrosarcoma in Rats: II. Influence of Sex Hormones and Repeated Transplantation on Tumor Immunity. M. Klein.—p. 381.

Histologic Changes in Strain C Mice Following Long-Term Ingestion of Thiouracil. A. J. Dalton, H. P. Morris, M. J. Striebich and C. S. Dubnik.—p. 391.

Carcinogenic Action of Mustards. W. E. Heston.—p. 415.

*Influence of Thymectomy on Incidence of Carcinogen-Induced Leukemia in Strain DBA Mice. L. W. Law and J. H. Miller.—p. 425.

Finer Structure of Hepatic, Intestinal and Renal Cells of Mouse as Revealed by Electron Microscope. A. J. Dalton, H. Kahler, M. J. Striebich and B. Lloyd.—p. 439.

Thymectomy and Induced Leukemia.—Removal of the thymus at 4 weeks of age in strain dba mice reduced the incidence of lymphoid leukemia induced by *methylcholanthrene* from 69.7 to 22.0 per cent. Removal of the spleen or transplantation of either one or two thymuses into intact dba mice at 4 weeks of age did not significantly change the incidence of induced lymphoid leukemias from that in control animals. Thymectomy followed by immediate autoplastic grafting of the thymus into the right axilla resulted in an incidence of induced leukemia of 69.1 per cent. Since thymectomized mice of strain dba bearing autoplastic grafts of the thymus show an incidence of induced leukemia (69.1 per cent) similar to that of the intact control mice (69.7 per cent), it appears that the presence of thymic tissue in the body is a necessary antecedent to the development of leukemia in a very high percentage of mice, even though the thymic tissue does not appear to participate actively in the conversion of a normal cell to a malignant cell. The absence of thymic tissue did not, however, significantly change the incidence of other types of tumors induced by methylcholanthrene, e. g., skin carcinomas and mammary tumors. The possible role of the thymus in the conversion of lymphoid cells from normal to neoplastic is discussed.

Journal of Nervous and Mental Disease, New York

113:1-94 (Jan.) 1951

Conditioning of Respiration and Its Psychosomatic Implications. B. Freedman.—p. 1.

Bilateral Symmetrical Necrosis of Corpora Striata: Report of Fatal Case and Reference to Possible Syndrome of Corpora Striata. W. A. Hawke and W. L. Donohue.—p. 20.

Technique of Histamine Biochemotherapy and Suggestions for Its Use in Psychiatry. M. D. Sackler, R. R. Sackler, A. M. Sackler and J. H. W. Van Ophuijsen.—p. 40.

Influence of Frontal Topectomy upon Gastric Secretion (Review of Data on 24 Cases and 14 Controls). M. B. Carpenter.—p. 52.

*Paralysis from Tetanus Antitoxin. L. B. Davis.—p. 61.

Paralysis from Tetanus Antitoxin.—Davis presents the case of a youth, aged 18, who ran a splinter into his right thumb. This splinter was removed, and, because of the possibility of manure contamination, 1,500 units of tetanus antitoxin were given into the left arm, after the usual intradermal sensitivity test, which was negative. Nine days after the accident, the patient had a severe delayed serum sickness, with urticaria, erythema, conjunctivitis and arthralgia. With the onset of this reaction he noticed a severe pain in his right shoulder. This persisted as an ache with a gradually increasing weakness. At the end of three months he was unable to raise the arm to shoulder height. Examination showed 50 per cent loss of arm abduction and winging and elevation of the right scapula with severe atrophy of the muscles supplied by the fifth and sixth cervical nerves. Under physiotherapy and treatment with vitamin B compound, there was gradual improvement, the muscles being restored to full use after eight months. The author briefly discusses four types of serum neuritis: radicular, neuritic, polyneuritic and central, and says that other serums and vaccines may cause this condition although more than half of the cases are caused by tetanus antitoxin. It is suggested that the new antihistamine drugs be used after injection of tetanus antitoxin either as soon as the symptoms of delayed serum sickness begin, or prophylactically from the sixth to the twelfth day after the injection. The efficacy of this procedure remains to be proved. Complete recovery usually results, but a small percentage of patients have residual paralysis. Fear of this should not discourage the use of tetanus antitoxin.

J. Pharmacology & Exper. Therap., Baltimore

101:119-242 (Feb.) 1951. **Partial Index**

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Renal Hemodynamic Effects of Phenylephrine (Neosynephrine) Hydrochloride in Man. A. P. Crosley Jr., J. K. Clark and H. G. Barker. —p. 153.

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Journal of Thoracic Surgery, St. Louis

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Pneumonectomy with Replantation of Lung in Dog for Physiologic Study. A. A. Juvenelle, C. Citret, C. E. Wiles Jr. and J. D. Stewart.—p. 111.

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Paraganglioma Simulating Carcinoma of Esophagus. F. H. Taylor. —p. 189.

Primary Solitary Neurogenic Tumors of Lung. W. Diveley and R. A. Daniel Jr.—p. 194.

One Hundred Thirty Consecutive Thoracoplasties: Evaluation of Results in Different Types of Pulmonary Tuberculosis. P. Ottosen, C. Popp, A. J. Beatty and W. W. Buckingham.—p. 202.

Accessory Diaphragm: Case Report. T. B. Sappington Jr. and R. A. Daniel Jr.—p. 212.

Repair of Aortic Aneurysm.—Polyethylene plastic films have been used to strengthen the walls of abnormally dilated arteries since 1946. Dicetyl phosphate, a stripping agent used in the manufacture of polyethylene (polythene®) plastic films, is the factor responsible for the fibrous tissue stimulation. The woman whose case is reported had an expansile, pulsating, dome-shaped mass just below the suprasternal notch. Roentgen examinations, including a retrograde aortogram and angiocardiogram, showed an aneurysm arising from the anterior surface of the ascending and transverse aortic arch. It had eroded through the sternum and was visible subcutaneously. The aneurysm therefore had an hour glass configuration; one portion being intrathoracic, the other being extrathoracic and the constricted portion being at the level of the sternal perforation. During the operation it was not possible to invest the aneurysm completely in polyethylene, but the neck of the aneurysmal sac was invested at its base. The polyethylene film produced fibroblastic proliferation with subsequent scarring and contraction, and thus the neck of the aneurysmal sac was occluded. This presumably allowed intraluminal clotting and produced the desired effect. Four months after operation the bulge had disappeared and the skin over the sternum was flat. The bony defect in the sternum had been replaced with firm scar tissue. The wrapping of aneurysms with strips of polyethylene offers a suitable method of treating those in which other methods are hazardous because of the position of the aneurysm, friable walls and close proximity to great vessels and vital structures. Polyethylene strips are superior to whole sheets of polyethylene, because they can be more closely applied to all parts of the vessel wall to be covered.

Maine Medical Association Journal, Portland

42:37-66 (Feb.) 1951

Case of Sigmoidovesical Fistula in a Male 39 Years of Age. A. H. McQuillan.—p. 37.

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The Staff Audit and the Consultation Ratio. F. T. Hill.—p. 58.

The Speech and Lip-Reading Clinic at Thayer Hospital, Waterville, Maine. E. O. Koons.—p. 61.

North Carolina Medical Journal, Winston-Salem

12:41-84 (Feb.) 1951

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Effect of Para-Aminobenzoic Acid (PABA) or Its Sodium Salt on Erythrocyte Sedimentation Rate in Vitro. J. C. Hayward and G. T. Harrell. —p. 47.
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Psychological Clinic of University of North Carolina Health Service. J. G. Dawson and E. M. Hedgpeth.—p. 60.
Bulbo-Respiratory Poliomyelitis: Problems of Diagnosis and Treatment. R. B. Lawson.—p. 62.
Bronchoscopy in Diagnosis of Bronchiogenic Carcinoma. J. R. Wright. —p. 66.
Hearing Loss. R. Arnold.—p. 67.

Pediatrics, Springfield, Ill.

7:153-304 (Feb.) 1951

*Progress in Study of "Mucoviscidosis" (Pancreatic Fibrosis) with Illustrative Case Presentations. H. Shwachman.—p. 153.
Spherocytosis and Increased Fragility Occurring in Erythroblastosis Fetalis Associated with ABO Incompatibility. G. C. Robinson, R. M. Phillips and M. Prystowsky.—p. 164.
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*Endocardial Fibroelastosis: Report of Two Cases. F. C. Collier and P. D. Rosahn.—p. 175.
Renal Carbonic Anhydrase in Premature and Mature Infants. R. Day and J. Franklin.—p. 182
Tissue Changes in Nephrotic Syndrome: Demonstration of Potassium Depletion. C. L. Fox Jr. and L. B. Slobody.—p. 186.
Use of Aureomycin and Penicillin in Treatment of Rubeola in Pre-Eruptive and Early Eruptive Phase. S. Karelitz, H. King, B. Curtis and M. Wechsel.—p. 193.
Neurologic Complications of Herpes Zoster. A. R. Nachman.—p. 200.
Aureomycin in Treatment of Molluscum Contagiosum. R. E. Votteler. —p. 206.
Electric Bunting to Maintain Body Temperature During Exchange Transfusion in Newborn Infant. P. Vogel, R E. Rosenfield and M. Steinberg.—p. 207.
Brain Damage in a Juvenile Diabetic Patient Associated with Insulin Hypoglycemia. L. I. Gardner and G. C. Reyersbach.—p. 210.
Therapy of Tuberculosis in Infants and Children. R. H. High.—p. 215.
*Brock Procedure for Relief of Pulmonary Stenosis in Tetralogy of Fallot. D. F. Downing, C. P. Bailey and R. P. Glover.—p. 230.
Protein-Bound Iodine in Infants from Birth to One Year of Age. T. S. Danowski, S. Y. Johnston, W. C. Price and others.—p. 240.

"Mucoviscidosis" (Pancreatic Fibrosis).—Pancreatic fibrosis is a generalized disease and may involve mucus-secreting glands in different degrees and in different parts of the body; hence the name mucoviscidosis was coined. This disease is more prevalent than is commonly realized. Until recently all patients with proved pancreatic fibrosis have died, but the prevailing pessimistic attitude toward this disease may be discarded if diagnosis is established early and the patient is given competent medical care. The most reliable diagnostic procedure is the direct examination of the duodenal fluid. The demonstration of pronouncedly reduced trypsin or lack of this substance in the duodenal fluid with an increase in viscosity is characteristic of the disease. Some patients, in whom the respiratory tract is involved to a much greater extent than the pancreas, may have normal or only slightly reduced duodenal trypsin with increased viscosity; measurement of the viscosity has proved valuable in these patients. The value of the stool trypsin test has certain limitations in these patients, assuming that the stool trypsin in small babies reflects duodenal trypsin activity. In 16 of 68 infants with pancreatic fibrosis and duodenal fluid negative for trypsin, results of the stool trypsin test were positive on one occasion. Perhaps some of these false positive stool tests are due to the presence of potent gelatin-liquefying bacteria. The author's method of treatment of pancreatic fibrosis includes high caloric diet, with protein hydrolysates in small babies; antibiotics, such as aureomycin and terramycin; pancreatin and high vitamin intake. Excellent to good results were obtained in 90 of 100 patients treated with aureomycin, while 10 patients were therapeutic failures. Results with terramycin were equally gratifying in 30 patients. Three illustrative cases are reported.

Endocardial Fibroelastosis.—Eleven cases of fibroelastosis of the endocardium found in the literature are reviewed, and two new cases in infants 7 and 3½ months old are reported. In six of these 13 cases there was a history of maternal disease during the prenatal period, and five of these six illnesses were of an inflammatory or infectious type. The age group in which this morphologic alteration was observed extended from a prematurely born infant to a child 5 years of age. Twelve of the patients were less than 27 months old, and nine were less than 5 months old. All the patients died in cardiac failure. Seven of the 13 patients had associated cardiovascular anomalies other than dilatation or hypertrophy of the cardiac chambers. Cardiac hypertrophy was observed in all but one of the 13 patients. Fibroelastic thickening of the endocardium was observed in the left ventricle of all 13 hearts. Ten showed the change in both the left ventricle and the left auricle. With the exception of the endocardial lesion, none of the usual evidences of an inflammatory reaction were present in any of the hearts. Cellular infiltrates, vascular proliferation, deposition of fibrous tissue, edema and necrosis all were absent on microscopic examination. Even the thickened endocardium occurred in an orderly arrangement of fibroelastic elements, which did not suggest that inflammation was the basic lesion. The thickened endocardium occurred diffusely throughout the heart chamber and not focally, as is so often seen after healing of a myocardial infarct. On both gross and microscopic study there was no specific change that could be cited as evidence of an inflammatory anlage in the production of this lesion. The pathogenesis of the lesion is unclear, although it is probable that the explanation lies in a developmental aberration in the fetus.

Brock Procedure for Relief of Pulmonary Stenosis.—The surgical relief of congenital pulmonary stenosis has been both direct and indirect. The indirect, shunting procedures have inherent dangers; the direct approach of Brock appears to be without these dangers, and the circulation is allowed a more normal course. Brock's approach was used by the authors in eight patients between the ages of 3 and 21 years, with tetralogy of Fallot associated with valvular stenosis in four and with infundibular stenosis in the remaining four. This approach entails an incision into the right ventricular chamber and the cutting of the stenosed pulmonary valve or the removal of obstructing tissue in the outflow tract of the right ventricle. In the four cases of infundibular stenosis, Brock's technique was modified in that a special rongeur with tapering jaws was used instead of a cutting punch for removal of obstructing infundibulum tissue. Results in these eight cases have been gratifying. Cyanosis was relieved immediately in six patients and some time after operation in one more patient. In six cases the improvement in exercise tolerance has been striking; in one there has been a definite increase. Although follow-up observation has been of short duration, there is reason to believe that the improvement will continue. Removal of the impediment to blood flow is surgically and physiologically sound and preferable to the production of a shunt. For this reason Brock's procedure must at present be considered the one of choice in cases of pulmonary stenosis.

Psychosomatic Medicine, New York

13:1-70 (Jan.-Feb.) 1951

Atopic Dermatitis: Clinical Psychiatric Study. J. G. Kepecs, A. Rabin and M. Robin.—p. 1.
Relationship Between Certain Emotional States and Exudation into Skin. J. G. Kepecs, M. Robin and M. J. Brunner.—p. 10.
Psychosomatic Theory of Thyrotoxicosis. G. C. Ham, F. Alexander and H. T. Carmichael.—p. 18.
Life Situations, Emotions, and Exercise Tolerance. C. H. Duncan, I. P. Stevenson and H. G. Wolff.—p. 36.
Psychodynamics of Depression from Etiologic Point of View. S. Rado. —p. 51.
Prolonged Sneezing: Case Report. N. Murray and J. Bierer.—p. 56.

South Dakota Journal of Medicine, Sioux Falls

4:1-38 (Jan.) 1951

Treatment of Acute Allergy Met in General Practice. F. W. Wittich. —p. 1.
Primary Carcinoma of Lung. C. S. Larson.—p. 11.
Hospital Service vs. Medical Practice. L. J. Pankow.—p. 18.

4:39-58 (Feb.) 1951

Severe Fractures About Ankle. R. Householder.—p. 39.
Diagnostic Significance of Some Ocular Complaints. P. J. Leinfelder. —p. 43.

FOREIGN

Acta Medica Scandinavica, Stockholm

139:79-166 (Jan. 31) 1951

Phosphatase Studies on Case of Prostatic Carcinoma with Metastases. S. E. Björkman.—p. 79.
*Protrusion of Cervical Intervertebral Disks with Lesion of Spinal Cord. R. Müller.—p. 85.
Protrusion of Thoracic Intervertebral Disks with Compression of Spinal Cord. R. Müller.—p. 99.
*Combined Intracavitary and Oral Therapy with Thiosemicarbazone (Conteben TB I). H. Malluche.—p. 105.
Studies on Effect of Anti Bone Marrow Serum. B. Björklund and L. Hellström.—p. 122.
Diabetic Renal Disease. C. J. Bjerkelund.—p. 133.
Eosinophilic Leukemia Infiltrating Gasserian Ganglion. N. B. Nordlander. —p. 146.
Correlation Between State of Cerebrospinal Fluid and Clinical Picture in Disseminated Sclerosis. R. Müller.—p. 153.

Protrusion of Cervical Intervertebral Disks.—Observations are reported on 13 patients with protruded cervical intervertebral disk, with symptoms of medullary lesion. The sex distribution in the material—11 men and two women—shows that males decidedly predominate, which corresponds to reports in the literature. Only two patients were aware of any trauma. Five patients, before the appearance of symptoms of medullary lesion, had at some period had signs of cervical radiculopathy, in two cases the interval being about 20 years. The symptoms had lasted for an average of three years. The clinical picture was extremely variable and easily confused with that of tumors and degenerative disease of the spinal cord. In all cases except one there was bilateral damage to the spinal cord. Segmental symptoms, arising from root compression, were observed in seven cases. Plain roentgenograms of the cervical spine showed in eight cases extensive, and in four cases more limited, spondylosis deformans. Only in one case was the roentgenogram normal. Myelography was carried out by the inflation of air into the cisterna magna. In all cases the subarachnoid space was narrowed and distorted by an anterior protrusion, which reached the spinal cord. There was no obstruction to the passage of the air into the thoracic subarachnoid space. Only in three cases was the protrusion limited to one intervertebral disk. In the remaining case it was more extensive. Twelve patients were operated on. The results were not very satisfactory, since in the majority of cases irreversible injury of the spinal cord had already developed as well as changes of the spondylosis deformans type, which did not permit a radical intervention.

Intracavernous Administration of Amithiozone.—One hundred patients with tuberculous pulmonary cavities were treated with combined suction drainage, daily intracavitary instillation of 0.1 gm. of amithiozone (thiosemicarbazone, TB-1) in a 20% suspension of glycerin, and amithiozone, 0.05 to 0.1 gm. daily by mouth. To prevent infection of the drainage canal, 10,000 or 20,000 units of penicillin were injected into the cavity every other day. If there were febrile reactions during this treatment streptomycin was given for one or two weeks, 0.25 gm. daily into the cavity and from 0.25 to 0.75 gm. intramuscularly. Prolonged treatment with streptomycin was avoided so that streptomycin-resistant tubercle bacilli would not develop. Suction drainage was usually done during the day and the intracavitary chemotherapy at night. Tubercle bacilli were usually eradicated in about three weeks, and no resistance to amithiozone developed. It proved possible to close permanently even comparatively large cavities. Patients with serious exudative tuberculous processes or with multiple cavities can also be treated with intracavernous administration of amithiozone. Before the trocar and catheter are introduced for suction drainage, it is necessary to ascertain that the pleural layers adhere to one another. If there is no adherence, it can be induced by the injection of blood, 60% dextrose or kaolin. The period over which drainage has to be continued ranges from several weeks to several months. In patients with large cavities supplementary collapse therapy may be necessary.

Canadian Medical Association Journal, Montreal

64:95-186 (Feb.) 1951

*Sudden Death from Asthma. C. H. A. Walton, D. W. Penner and J. C. Wilt.—p. 95.
Oesophageal Foreign Bodies. G. Boyd.—p. 102.
The Painful Back. A. W. Bagnall.—p. 107.
Tumours of Brain, Occipital Lobe: Their Signs and Symptoms. D. Parkinson and W. M. Craig.—p. 111.
Maintenance and Improvement of Hearing in Radical Mastoid Surgery. J. A. Sullivan.—p. 113.
Placental Anomalies. A. A. Earn.—p. 118.
Tridione and Paradione Sensitivity. R. R. Forsey and R. W. Black. —p. 120.
Indians and Tuberculosis of Skin and Bones. E. Gaumond and R. Therrien.—p. 122.
Persistent Vomiting Due to Cardio-Oesophageal Relaxation in Infancy. P. H. Spohn and C. G. Campbell.—p. 126.
Oesophago-Dermato-Oesophagoplasty for Congenital Oesophageal Atresia. D. E. Ross, H. Baxter and H. E. McHugh.—p. 128.
Method of Selection and Treatment of Group of Patients Suffering from Atypical Facial and Head Pain. H. T. R. Mount.—p. 131.
Traumatic Rupture of Lower Trachea with Stenosis. G. A. Henry. —p. 134.
Neuropsychiatric Sequelae of Cardiac Arrest During Spinal Anesthesia: One Year Follow-Up of Case. V. A. Kral.—p. 138.
Broncholithiasis and Broncho-Oesophageal Fistula. H. M. Kidd and E. Christopherson.—p. 142.
Acromegaly and Diabetes. J. H. Darragh and W. M. Shaw.—p. 146.
Protein Feeding and Blood Sugar Levels in Diabetes. E. R. Gubbay. —p. 150.
*Myasthenia Gravis of the Newborn. A. K. Geddes and H. M. Kidd. —p. 152.

Sudden Death in Asthma.—Asthma is generally regarded as a benign disease incapable of causing death. The authors report on 13 patients with bronchial asthma who died suddenly during an attack and in whom there was demonstrated at autopsy sufficiently widespread bronchial obstruction to account for death. The ages of the patients varied from 14 months to 62 years. A constant pathological picture was seen in all. The smaller and medium sized bronchi were occluded with thick tenacious mucus; the walls of the bronchi were edematous and infiltrated with eosinophils and the basement membrane was hyalinized. The lungs were emphysematous and distended. Some degree of right ventricular hypertrophy was present in six cases. Heavy sedation preceded death in nine of the 13 cases, and the authors conclude that morphine, meperidine (demerol®) hydrochloride, large doses of barbiturates, intravenous anesthetics and curare are dangerous in an asthmatic. They also regard aspirin sensitivity as a bad prognostic sign, since three of their 13 patients manifested it.

Myasthenia Gravis of the Newborn.—Myasthenia gravis has been considered rare below the age of 10, and until recently its occurrence in infants has passed unrecognized. The authors report the occurrence of transitory myasthenic symptoms with eventual complete recovery in three infants born of myasthenic mothers. From a review of the literature they conclude that neonatal myasthenia can be divided into two definite groups: true persistent congenital myasthenia gravis, so far reported only in children of nonmyasthenic mothers, and a transient myasthenia syndrome of the newborn, occurring in the infants of women with or without thymectomy, who have suffered from myasthenia gravis during their pregnancies. Before the advent of neostigmine (prostigmin®) bromide it was customary to recommend therapeutic abortion to patients with myasthenia gravis. Now that more of such pregnancies are allowed to continue to term it is probable that cases of myasthenia syndrome of the newborn will be observed more frequently. The pathogenesis of the condition is discussed.

Münchener medizinische Wochenschrift, Munich

93:153-208 (Jan. 26) 1951. **Partial Index**

Surgical Treatment of Congenital Malformations of the Heart and of the Large Vessels. G. Kuetgens.—p. 157.
*Life at Low Body Temperature. W. Lutz and R. von Werz.—p. 161.
*Temporal Arteritis: Two Cases. H. Weil.—p. 167.
**Is Vaccination with BCG Entirely Harmless?* W. Beyer.—p. 171.

Life at Low Body Temperature.—The cause of death from exposure to cold in warm-blooded animals must be searched for in those functions in which these animals differ from cold-blooded animals; namely, in oxygen consumption and oxygen

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An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

supply. The oxygen consumption of cold-blooded animals is largely dependent on the surrounding temperature; if it declines, the metabolic rate declines with it. The cold-blooded animal makes no effort to increase its body temperature by increasing the metabolism. The second difference is in the hemoglobin, the oxygen vehicle. This functions satisfactorily only when its affinity for oxygen is optimal, for, if this affinity is too small, oxygen will not be taken up by the lung, and, if it is too large, oxygen will not be given off to the tissues. This optimal affinity is dependent on the temperature. The hemoglobin of cold-blooded species not only functions at lower temperatures but is adequate over a larger range of temperatures in comparison to warm-blooded species, whose hemoglobin requires a constant temperature. The authors see in the species specificity of the hemoglobin the essential cause of the disturbances that develop when a warm-blooded animal is exposed to cold. The oxygen pressure of the blood decreases as cooling becomes more intense and prolonged; that is, death from exposure to cold is the result of oxygen deficiency. Experiments proved that the life of animals exposed to prolonged cooling could be prolonged by oxygen given under pressure. On the basis of this and other observations the authors make the following suggestions for the *resuscitation of persons exposed to excessive or prolonged cold*: 1. If the body temperature is lowered, the body should be warmed in a bath at 40 C. (104 F.). 2. If the cooling has depressed the respiration, oxygen should be given (if necessary inflation of the rigid thorax by means of a respiratory mask). This should be done even if there is apparent respiratory arrest. 3. Antishock therapy should be given to prevent later death.

Temporal Arteritis.—Two cases of temporal arteritis are reported. The first was that of a man aged 72 who complained of a persistent sensation of formication in the temporal region and also of tearing and piercing headaches, which were severest when he was reclining and were especially intense in the evening and during the night, often interfering with sleep. Examination revealed bilateral thickening and hardening of the temporal arteries and its branches and bluish red discoloration of the overlying skin. Histologic examination of a resected piece of the right temporal artery revealed that the arterial lumen was narrowed to a small slit. Next to the endothelial lining was a layer of fibrous connective tissue; beyond that there was a wide zone of granulation tissue, which consisted chiefly of epitheloid cells, interspersed with multinuclear giant cells and with remnants of the elastica interna, the other elastic fibers having been destroyed. The granulation tissue also contained numerous lymphoid cells and occasional granulocytes. The muscularis was narrow and showed fibrosis. The headaches subsided following resection of the artery, and the patient's general condition improved in response to treatment with iron, arsenic and a hydrochloric acid-pepsin mixture. In the second patient the skin covering the main branches of the temporal artery was reddish but the arteries did not stand out like cords above the level of the skin as in the other patient. Palpation revealed, however, cordlike hardening of the arteries. Resection of a piece of the temporal artery was followed by disappearance of the severe headaches. The author compares the aspects of these two cases with those of others reported in the literature and stresses that severe headaches are usually the most significant symptom.

Is Vaccination with BCG Entirely Harmless?—In a boy aged 10 a tuberculous abscess developed at the site of vaccination with BCG and the axillary lymph nodes of the same side of the body became swollen and had to be removed. This was the only case in 3,000 vaccinations with BCG in which this complication developed. The author concludes that the tubercle bacilli in BCG may, under certain conditions, such as in the presence of lowered resistance, elicit a tuberculous tissue infection.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

26:1-100 (Sept.) 1950. **Partial Index**

Clinical Development of Yaws in Baixada Fluminense, State of Rio de Janeiro, Brazil. F. Nery Guimarães.—p. 1.
Studies on Chyluric Urines. C. F. Asenjo, J. E. Colón and F. Hernández-Morales.—p. 55.

Revista Chilena de Pediatría, Santiago

21:535-580 (Dec.) 1950. **Partial Index**

*Chloramphenicol in the Treatment of Children with Typhoid Fever. J. Meneghello, O. Undurraga and A. Raimann.—p. 535.
Protein Content of the Blood in Prematurely Born Children: Study of 109 Cases. O. Correa B. and H. del Pozo.—p. 544.

Chloramphenicol in Children with Typhoid Fever.—Sixty-one children with typhoid, most of whom were over 6 years old, were treated with chloramphenicol. In most of them the clinical picture was moderately severe and the diagnosis was confirmed by the isolation of Eberthella typhosa or by a positive reaction to the agglutination test. In 41 of the patients a two hour schedule, in 10 cases a four hour schedule and in 10 a 12 hour schedule of treatment was employed. As soon as the temperature became normal the dose was halved. The total dose averaged about 22 Gm., and the duration of treatment was 12½ days on the average. If treatment is continued for more than 12 days, the incidence of relapse is low. Of 13 children whose stools were cultured for several months after treatment, five showed positive cultures. Results of the agglutination tests were inconsistent. Four children died as a result of complications and one as the result of typhoid. Chloramphenicol does not prevent the complications usually caused by typhoid, and for this reason dietetic and general measures should be strictly enforced. The authors believe that the 12 hour schedule of treatment with chloramphenicol should be continued for at least 14 days.

Revista Clínica Española, Madrid

39:233-286 (Nov. 30) 1950. **Partial Index**

*Treatment of Collagen Diseases with Nitrogen Mustards. Treatment of Asthma. C. Jiménez Díaz, J. Perianes, A. Merchante and others. —p. 239.

Nitrogen Mustard in Asthma.—Nitrogen Mustard was administered to eight patients with acute bronchial asthma of long duration. The drug was administered by intramuscular injection in doses of 5 mg. every other day for a total of two or three injections. The treatment resulted in complete disappearance of asthma from the first injection in seven cases and slight improvement after the third and last injection in one case. A second and, in some cases, a third injection was given to maintain good results. Three months after discontinuation of the treatment cure of asthma persists in five patients. During this period the disease recurred in an attenuated form in the other two patients. According to the authors, asthma is one of the collagen diseases that are due to an abnormal organic reaction, during which incomplete antibodies are formed. These antibodies are incapable of producing immunity. Nitrogen mustard controls this abnormal action and elicits a normal reaction, with the production of complete antibodies, which can produce immunity. The normal reaction results in control of local and general eosinophilia, of lymphocytosis and of the histologic local lesions caused by dysfunction, if they are still in the reversible stage.

Rev. Gynec. e Obstet., Rio de Janeiro

45:3-60 (Jan.) 1951. **Partial Index**

*Endometriosis. N. Arenas and A. Foix.—p. 4.

Endometriosis.—Of 3,087 women with gynecologic diseases observed by the authors in Buenos Aires, 34 had symptoms suggestive of endometriosis. The predominant symptom in all cases was intramenstrual menalgia of progressive acuteness, often associated with frequency of urination, dysuria, rectal tenesmus and pain in the sacrum and bladder. Other signs of diagnostic value were painful uterine retroflexion and the presence of a tumor of the uterus or of tumoral nodules in the adnexa as found by palpation. As a rule, there were no signs of septic and gonococcic infection. Three patients received medical treatment, while the remaining 31 had a conservative operation. A macroscopic diagnosis of endometriosis was made in all patients in the latter group. Microscopic examinations of the removed tissues were made in 25 cases. The results confirmed the surgical diagnosis in 19 cases. Endometriosis was found in the uterus in seven cases, in the fallopian tubes in one case, in the navel in one case and in the ovaries in 10 cases. According to the authors, endometriosis is frequently associated with myoma of the uterus, blastoma of the ovaries and cancer of the uterine neck. Various treatments are (1) medical treatment, consisting of testosterone and sedatives when the symptoms are mild and the patients are in or near the menopausal age, (2) conservative surgery (with conservation of a piece of the ovaries and sufficient functional endometrium) in women in the reproductive age, (3) castration in the presence of bilateral extensive involvement of the ovaries, together with myoma of the uterus and strong adhesions fixing the uterus and (4) roentgen therapy for acute recurrences after conservative surgical treatment as well as in presence of contraindications to or refusal of surgical treatment.

Revista Médica de Chile, Santiago

78:777-838 (Dec.) 1950. **Partial Index**

*Three Years of Experience with Anticoagulant Treatment. R. Armas Cruz, G. Lobo Parga and M. Davila.—p. 777.

Treatment with Anticoagulant Substances.—During the last three years the authors have administered anticoagulant substances to 318 patients of either sex, who were between the ages of 41 and 60. These patients have been observed for six months to three years. Treatment with bishydroxycoumarin (dicumarol®) alone or combined with heparin was given in the usual manner with good results in the following conditions: (1) myocardial infarction, (2) venous thrombosis without pulmonary embolism, and (3) pulmonary embolism without cardiac insufficiency. It was also successful in preventing thromboembolism. The results of the treatment were poor in cases of typical anginal pain, in arterial embolism and arterial thrombosis (including cerebral thrombosis). In cases of pulmonary embolism with cardiac insufficiency and phlebothrombosis the treatment failed. In these cases, however, anticoagulant treatment seems more promising when combined with ligation of the given vein.

Semaine des Hôpitaux de Paris

27:331-362 (Jan. 30) 1951

*Paraaminosalicylic Acid in Treatment of Primary Infection of Tuberculosis in Young Children. E. Lesné, L. H. Lafay-Coletsos and C. Lefrançois.—p. 331.

Causes of Eczema. E. Daubresse.—p. 336.

Diagnosis of Brucellosis with Aid of Bacteriotropic Index. G. Renoux and G. Simonnet.—p. 341.

*Pathological Manifestations in Lung and Mediastinal Lymph Nodes in Persons Vaccinated with BCG. J. Le Melletier and H. Cassar.—p. 344.

Paraaminosalicylic Acid in Tuberculosis of Children.—Twenty-eight children between the ages of 2 and 6 years with primary tuberculous infection were treated with pellets of paraaminosalicylic acid or sodium salt of paraaminosalicylic acid for three to four months. The daily dose varied from 0.60 to 0.75 Gm. per kilogram of body weight. Roentgenologic and clinical results were highly satisfactory. The clinical symptoms, particularly fever, frequently subsided within the first 15 days of treatment. The general condition was improved within the following weeks. There was significant roentgenologic improvement, usually beginning during the first month of treatment. After three to four months of treatment the roentgenologic clearing obtained was comparable to that usually observed in children after 18 months of simple dietary and hygienic management. Treatment with paraaminosalicylic acid was well tolerated. The only untoward reactions consisted of cutaneous manifestations of intolerance, which disappeared rapidly after treatment was discontinued. Treatment with the sodium salt of paraaminosalicylic acid consequently seems to exert a curative effect on the manifestations of primary and secondary tuberculosis in children. Furthermore, it seems to shorten the duration of preventive treatment in children with primary infection involving the pulmonary lymph nodes. Treatment with paraaminosalicylic acid is a valuable adjunct to dietary and hygienic management and may be effective in the occasionally severe forms of primary infection in young children, the spontaneous regression of which is slow and frequently interrupted by acute manifestations.

Pathological Manifestations in Persons Vaccinated with BCG.—The occurrence of a clinical or roentgenologic abnormality of the lung, the mediastinal lymph nodes or the pleura in a person vaccinated with BCG requires careful investigation. Defective roentgenographic technique is responsible for a certain number of abnormal thoracic pictures observed under these conditions. Only strictly frontal pictures taken on inspiration make possible a correct evaluation of the mediastinum, hili and parenchyma. After a roentgenographic error has been excluded, a nontuberculous disease may be taken into consideratioin. In the majority of cases, however, a natural infection with a virulent tubercle bacillus has occurred in a contaminated environment. Careful investigation in these latter cases will frequently prove that the person with the abnormal condition was not vaccinated effectively at the time of the virulent contamination, that vaccination was not followed by a change in reaction to the tuberculin test from negative to positive, that too much time has elapsed since vaccination, that vaccination was administered during the preallergic phase or that an early virulent superinfection occurred during the vaccinal incubation period. A tuberculous lesion observed early after vaccination is only rarely caused by a virulent superinfection in an effectively vaccinated person in whom the reaction to the tuberculin test changed from negative to positive after the vaccination and before the natural infection. Statistics show that BCG vaccination is of definite value in preventing primary infection of tuberculosis and its immediate sequelae, miliary tuberculosis and meningitis. But there is no proof that it prevents the occurrence of pulmonary tuberculosis at a much later date. BCG vaccination may be responsible for mediastinal adenopathies in exceptional cases, two of which are reported by the authors. The condition is benign, and its diagnosis may be considered only in persons who have been strictly removed from any contact with tuberculous patients. BCG vaccination does not generally have any undesirable effects in persons with a positive reaction to tuberculin and in patients with pulmonary tuberculosis, but occasionally it may produce perifocal reactions. These reactions might also occur when vaccination is administered during the preallergic phase. It is suggested that intrathoracic adenopathy due to BCG may be favored by a preceding natural formation of tubercles or by an early virulent superinfection. In reality, the risks associated with BCG vaccination are small when compared with other methods of vaccination, but the efficacy of this vaccination is limited, and it should never be considered as a substitute for the classical methods of antituberculous prophylaxis.

Settimana Medica, Florence

38:521-550 (Nov. 15) 1950. **Partial Index**

Epidemiological and Clinical Observations on a New Outbreak of Salmonellosis in the Province of Florence Due to Eating Ice Cream. G. Biffi-Gentili and G. Abbozzo.—p. 529.

Urinary Elimination of 17-Ketosteroids in Women with Hypertrichosis, Before and After Administration of Folliculin. N. Di Ferrante.—p. 535.

*Aerosol Treatment of Dyspnea in the Cardiopath: Broncho-Dilating Aerosol. R. Monfardini and G. Vallecorsi.—p. 543.

Aerosol Treatment of Dyspnea in the Cardiac Patient.—Monfardini and Vallecorsi administered bronchodilating aerosols of epinephrine and theophylline substances, alone or in combination, to 22 patients with dyspnea of cardiac origin. Dyspnea was of a different type and acuteness as it complicated different heart diseases in various stages. The aerosols were given through the oral dispenser. A 2 per cent commercial epinephrine solution (sindreco) was inhaled for five to seven minutes for a total of five applications, and a commercial theophylline solution (tefamin) was inhaled for 10 or 15 minutes up to a total of 15 applications. Aerosol bronchodilating treatment gave better results than parenteral administration of the same substances to the aforementioned patients. The epinephrine aerosols promptly controlled the acute crises of dyspnea in patients with either left ventricular insufficiency or with pulmonary heart disease (cor pulmonale) resulting from bronchial asthma of long duration, but they had no effect on continuous dyspnea in patients with total cardiac insufficiency. This type of dyspnea responds well to theophylline aerosols. The tolerance of the patients to the inhalation of these aerosols was good. The authors believe that bronchodilating epinephrine aerosols control bronchial spasm as well as blood stagnation in the pulmonary vessels and that they stimulate general circulation. Theophylline aerosols control bronchial spasm and stimulate central nervous reflexes, through which respiration and cardiocirculatory functions improve.

South African Medical Journal, Cape Town

24:1081-1108 (Dec. 30) 1950. Partial Index

Electrokymography: Preliminary Report. R. J. Tahan and S. F. Oosthuizen.—p. 1081.
*Retrolental Fibroplasia: Report of Two South African Cases and Brief Review of Literature. H. Kaye and A. M. Rudolph.—p. 1089.
Production of Protective Antibody in Human Beings Immunized with Typhoid Endotoxoid. J. H. Mason and M. Robinson.—p. 1096.

Retrolental Fibroplasia.—Kaye and Rudolph present the histories of two prematurely born infants who had bilateral retrolental fibroplasia. They point out that confusion exists about the differentiation between the true bilateral developmental type (which occurs only in premature infants) and the unilateral type (found in full term infants). The unilateral type is the one usually referred to as a pseudoglioma, which indicates a white mass behind the lens and usually results from a chronic ocular infection, such as metastatic ophthalmitis. The two cases described here were of the true developmental type, which is characterized by a gray pupillary reflex, a retrolental vascular membrane, microphthalmos, shallow anterior chamber with anterior synechiae, remains of the anterior pupillary membrane, spheroidal lens and searching nystagmus. The incidence of this condition has been highest in some of the larger American cities. The cause has not been definitely established, but the authors mention various etiologic theories, pointing out that the modern tendency to give high doses of vitamin A and D to infants and the resulting low vitamin E levels may play a part. Treatment is rather unsatisfactory, but it is suggested that vitamin E be administered to premature infants. Deep roentgen therapy to the back of the globes might devascularize a vascular membrane and retard or halt the progress of the fibroplasia. The total dose suggested is about 400 to 1,000 r.

Strahlentherapie, Berlin

83:325-564 (No. 3) 1950. Partial Index

Irradiation in Operable Carcinoma of Breast. L. Diethelm.—p. 327.
*Treatment of Bone Metastases in Carcinoma of Breast. E. Pulvermacher.—p. 339.
Technique of Irradiation in Cancer of Breast. R. Bauer.—p. 401.
Significance, Possibilities and Results of Cytologic Diagnosis in Cancer of Lungs. T. Hornykiewytsch and W. Lorenz.—p. 441.
Application of Cytologic Diagnosis in Gynecologic Cancer. H.-K. Zinser.—p. 465.
Chemoprophylaxis in Radium Therapy of Cervical Carcinoma: Pathologic and Clinical Aspects. H. Muth.—p. 493.
Age Factor in Prognosis of Carcinoma of Female Genitalia. G. Schömig.—p. 499.
Studies on Biologic Effect of Ultrasonics on Living Cell: II. Reaction of the Female Genital Apparatus of White Mouse to Ultrasonic Treatment. H. Brettschneider.—p. 517.
Impairment in Fertility Following Application of Ultrasonics to the Female Genitalia. W. H. Thiele.—p. 531.

Bone Metastases from Mammary Carcinoma.—Pulvermacher observed 30 women who had cancer of the breast and bone metastases. The metastases, which were usually multiple, were found only in areas where red marrow exists. The majority of metastases developed during the first two years after the removal of the primary tumor. In women of menopausal age the interval was usually shorter (about 20 months) than in women beyond the menopausal age (28.8 months). Intensive irradiation with doses of 3,000 to 4,000 r is necessary for effective treatment. One of the first and most gratifying effects of roentgen irradiation is the analgesic effect on the bone metastases. A remarkable regeneration of destroyed bone regions resulted in many cases, in a few cases the pathological changes completely disappeared, in other sites the irradiated regions showed sclerotic density and in still others the bone structure assumed a spotted, cloudy appearance. Spontaneous fractures healed, but where bone destruction had led to deformity, this was not counteracted by irradiation. Irradiated vertebrae frequently contracted, assumed a saddle or wedge shape or fused with adjoining ones. Although the bone metastases responded favorably, the appearance of visceral metastases and increasing cachexia often reduced the seemingly lengthened life expectancy. Prolonged periods of cure were rare. Reports indicate that the survival after the appearance of bone metastases averages about five months without treatment. In the patients receiving irradiation it was 15.5 months. Medication with male sex hormones, to counteract the stimulating effect of ovarian hormones, and/or castration may increase the favorable effect of irradiation on bone metastases.

Trans. Royal Soc. Trop. Med. and Hyg., London

44:237-354 (Dec.) 1950. Partial Index

Tropical Pulmonary Eosinophilia. J. D. Ball and R. Treu.—p. 237.
Critical Review of Present Position of Sulphone Therapy in Leprosy. R. G. Cochrane.—p. 259.
Filariasis in Melanesia: Observations at Rabaul Relating to Incidence and Vectors. T. C. Backhouse and G. A. M. Heydon.—p. 291.
Oral Aureomycin in Treatment of Tropical Ulcers and Cancrum Oris. O. Ampofo and G. M. Findlay.—p. 307.
*Treatment of Yaws by Aureomycin. O. Ampofo and G. M. Findlay.—p. 311.
*Chloramphenicol in Treatment of Yaws and Tropical Ulcer. O. Ampofo and G. M. Findlay.—p. 315.
Lathyrism Syndrome. C. Gopalan.—p. 333.

Treatment of Yaws by Aureomycin.—Five children, 3 to 8 years of age, with florid secondary yaws were treated with aureomycin hydrochloride. This was given in the form of capsules by mouth, 250 mg., three times daily for seven days. This dose cleared up the secondary lesions and prevented recurrence for at least six months. Aureomycin given by mouth proved also of value in two children, 8 and 10 years of age, respectively, with late secondary or early tertiary yaws. They were given 500 mg. three times daily for seven days. It appears that in late secondary and in tertiary yaws aureomycin in the dosage given is less spectacular in its action than in patients with a florid secondary skin eruption. Nevertheless, it is of significant value in healing chronic ulcers and in relieving the pain in yaws periostitis. The oral administration of aureomycin caused no toxic symptoms such as fever, headache, nausea, vomiting or skin eruptions. Aureomycin behaves in yaws much in the same way as does penicillin. It has the advantage over penicillin in that it is effective by mouth in comparatively small doses. In mass treatment this is obviously a great advantage, since besides the pain of daily intramuscular injections there is a great saving of labor, apparatus and time.

Chloramphenicol in Yaws and Tropical Ulcer.—In this report Ampofo and Findlay present evidence indicating that chloramphenicol shares with penicillin and aureomycin the power to heal rapidly the primary and secondary lesions of yaws and also to eliminate the bacterial flora from tropical (phagedenic) ulcers, which allows healing to take place. Like aureomycin, chloramphenicol has the advantage over penicillin that it can be given by mouth. From the small number of patients so far treated with aureomycin and chloramphenicol it is impossible to determine which of the two is the more effective, as both antibiotics are so excellent.

Tubercle, London

32:1-24 (Jan.) 1951

Tuberculous Glands in Axilla and Groin. E. Hinden, S. G. Nardell and S. Anabtawi.—p. 2.
Mass Radiography and Public. G. Z. Brett.—p. 6.
*Thiosemicarbazones in Treatment of Pulmonary Tuberculosis. R. Livingstone and E. W. Street.—p. 8.

Amithiozone in Pulmonary Tuberculosis.—The histories are given of 12 patients who were treated with amithiozone (thioparamizone). The tuberculosis was of relatively recent onset in three of the patients; five had a more chronic form of the disease, and two had endobronchial tuberculosis. All patients at first had one 50 mg. tablet daily for three days, two 50 mg. tablets daily for the next three days and four 50 mg. tablets daily thereafter. The tablets were given either one or two at a time after meals, and treatment was in most cases continuous for up to five months. Although no dramatic claims can be made for this drug there is evidence that it is of some value in the treatment of pulmonary tuberculosis. Its effects appear to be most satisfactory in exudative lesions, and little benefit, if any, was observed in the more chronic type of lesion. The mild gastrointestinal upsets, depression and subjective ocular symptoms all seem to be transitory phenomena, not due to overdosage but disappearing in the course of the first few weeks of treatment as the body becomes adapted to the drug. An advantage of this drug over other antituberculous agents now in common use is its ease of administration and the fact that there appears to be no contraindication to prolonged administration.

BOOK REVIEWS

ysical Examination in Health and Disease. By Rudolph H. Kamp- r, A.B., M.D., Associate Professor of Medicine, Vanderbilt University ol of Medicine, Nashville, Tenn. Cloth. $8. Pp. 821, with 550 illus- ns. F. A. Davis Company, Publishers, 1914-16 Cherry St., Philadel- 3, 1950.

espite the fact that there are several excellent American books on physical diagnosis, the author, after 25 years of rience in teaching this subject, felt that there was a need a new textbook incorporating certain features not found satisfactory degree in existing books. He lists these features he preface, and an appraisal of his success in accomplishing aims will serve to demonstrate most of the qualities of the me.

eeling that the second year medical student should expand idly his knowledge of medical terminology, Dr. Kampmeier incorporated many different technical terms and synonyms broaden the student's vocabulary. He has attempted also to e anatomic, physiologic, and pathologic reasons for those ements that appear to him to require explanation. He has, eneral, accomplished these purposes well.

decidedly advantageous feature of this book is the presen- on of the physical diagnosis of each region of the body in chapters, the first dealing exclusively with the normal find- s and their variations, the second devoted to abnormal find- s. This arrangement permits the student to study the normal hout being enticed into considerations of the pathological. sons concerned with the teaching of physical diagnosis are nly aware of the tendency for second year medical students be concerned with diseases and syndromes before they have stered fully the normal and its variations.

The author has succeeded in his effort to introduce an ample mber of illustrations into the text, and the quality of these strations is, as a whole, above reproach. The availability of merous, good, interesting illustrations should make this book ular with students, who do not ordinarily see more than a ction of the many abnormal conditions described in such a tbook in the customary one semester course in physical diag- sis. The use of many normal and abnormal roentgenograms rves to correlate roentgen and physical findings, and these ustrations are well reproduced for the most part.

The text is well written and has a greater degree of continuity an do some other books in the field. The relative absence of aterial on medical diagnosis permits a proportionately greater mount of space to be devoted to a consideration of the primary ubject, which is consequently developed in sufficient detail without becoming tiresome. In some instances the chapters on abnormal findings include brief outlines of the abnormal pathological and physical findings in selected pathological states. These are sufficient for the purpose intended.

A definite defect exists. There is no integrated description of either a neurological or a vascular examination. For example, the examinations of the individual cranial nerves are scattered through the sections devoted to the head and neck, the eyes, he ears, and the nose and throat, and there is no separate sec- on devoted to an examination of the cranial nerves per se. lthough one may argue that such an examination rightfully elongs in the field of neurological diagnosis, it should be pre- nted in an integrated manner, even in outline form, in a text- ok of this sort. One who is particularly interested in the ripheral vascular system may insist that the examination of e peripheral vessels and the limbs for changes secondary to ripheral vascular disturbances be treated as a distinct disci- line and not interspersed, inadequately in this instance, in the eneral examination of the limbs.

The format of the book is above reproach, the paper excel- nt, and the photographs superior. Especially notable is the absence of old photographs so commonly employed in edition after edition of textbooks of this sort. Combined with a good series of lectures and demonstrations, this book should serve its purpose admirably. Moreover, it makes interesting reading, even to one who has read many such textbooks, some of them a number of times.

Gastroscopy: The Endoscopic Study of Gastric Pathology. By Rudolf Schindler, M.D., F.A.C.P. Second edition. Cloth. $20. Pp. 433, with 376 illustrations. The University of Chicago Press, 5750 Ellis Ave., Chicago 37; Cambridge University Press, Bentley House, 200 Euston Rd., London, N.W.1, 1950.

The first edition of Schindler's "Gastroscopy" appeared in 1937. The advancement and popularization of the method of gastroscopy is responsible for the appearance of this edition. Comparison of the two reveals that most chapters have been entirely rewritten, a new one has been added and a great deal of new material incorporated. Many color pictures were replaced by new and better ones, and the total was increased from 96 to 120. Particularly interesting to the general practitioner should be the chapter dealing with the history of gastroscopy. The method had its origin with unsuccessful attempts of Kussmaul in 1868 and with the first more or less successful rigid gastroscope of Mikulicz in 1881. The progress has been marked by a number of innovations and improvements, so that now there is what appears to be a satisfactory flexible gastroscope introduced by the author in 1932. The present volume is based on experience with 1,300 gastroscopies performed with the rigid gastroscope and 6,000 gastroscopies performed with the flexible gastroscope. Comparative observations with the aid of radiologic studies, gross specimens and histologic studies have helped to establish the criteria for the interpretation of the gastroscopic pictures. There are chapters dealing with the anatomy of the parts concerned, the technic of the method, the danger. Particularly important are the chapters dealing with endoscopic studies of the gastric pathology and the chapter dealing with the malignant tumors. The volume is attractively printed and is profusely illustrated. An extensive bibliography serves to make this volume a complete textbook on the subject of gastroscopy.

Pneumoconiosis: Beryllium, Bauxite Fumes, Compensation. Sixth Saranac Symposium, 1947. Edited by Arthur J. Vorwald, M.D., Director of Trudeau Foundation and Saranac Laboratory, Saranac Lake, N.Y. With collaboration of Manfred Bowditch, A.B., Thomas M. Durkan, M.E., and Theodore C. Waters, L.L.B. Leroy U. Gardner memorial volume. Cloth. $7.50. Pp. 659, with 196 illustrations. Paul B. Hoeber, Inc. (Medical Book Department of Harper & Brothers), 49 E. 33rd St., New York 16, 1950.

This book presents the proceedings of a conference held at Saranac Lake in the fall of 1947 under the sponsorship of the Saranac Laboratory. The conference was held for the discussion of the problems relating to two new occupational diseases, one connected with beryllium workers and the other with workers exposed to bauxite fumes. In addition, there is discussion of the medicolegal aspects of workmen's compensation in connection with these disabling diseases. In the preface, regret is expressed about the delay of publication due to unforeseen difficulties. To offset the delay, bibliography on the subject matter is included up to Jan. 1, 1950.

The volume is divided into seven parts, five of which deal with the beryllium problem, one with the bauxite fume problem, and another with problems related to workmen's compensation. There are twenty-nine presentations on beryllium, three on bauxite fumes, and seven on compensation.

The history of the beryllium problem is set forth and the various known sources, processes, and occupations in which workers are exposed to beryllium are included, as well as the present and future uses of beryllium. The acute and chronic types of pulmonary disease and the lesions of the skin are described separately and in some detail by physicians who have had extensive clinical experience in dealing with these diseases. Part three is particularly commendable in that the first presen-

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he reviews here published have been prepared by competent authorities d do not represent the opinions of any official bodies unless specifically ated.

tation combines the clinical and epidemiological aspects. This is followed by presentations of those aspects that deal with the roentgenological, physiological, pathological, differential clinical diagnosis, and postmortem observations. Part four deals with the studies related to biochemistry and toxicology, and the fifth part is concerned with the experimental aspects. The difficulty of reproduction of the disease in animals is discussed, as is also the need for development of methods for quantitative determination of beryllium in tissues. Considerable space is devoted to the discussion of the latent development of the disease after exposure to beryllium. Some question beryllium as the etiological agent; others believe there is no doubt about beryllium being the causative agent.

Whether the disease associated with beryllium exposure is local or constitutional as general intoxication is discussed, but the question remains unsettled.

The several papers and the discussions of them present the facts as they were known up to 1947, and indicate quite clearly what is not known and, therefore, what problems remain to be clarified by future observation and study.

Part six deals with the pulmonary diseases observed among workers exposed to bauxite fumes, stating the facts as they have been established and emphasizing the need for further studies to elucidate the exact etiology and pathogenesis of the disease.

Since the date of the conference, a lot of work has been done which has thrown light on some of the obscurities that existed in 1947. Although at the present time there remain many unanswered questions, intensive work is in progress.

The book is to be commended for the order and arrangement of the material presented, although objection is justified in the use of the term "pneumoconiosis" as a title, since this word leads to semantic confusion. It is important from a historical viewpoint, and it is of particular and peculiar importance in the fact that it is a memorial volume to Dr. Leroy U. Gardner, who had planned the conference prior to his death and who has contributed more to the knowledge of pulmonary disease related to occupation than anyone else in the United States.

Illegitimate Sonnets. By Merrill Moore. Cloth. $2.75. Pp. 125. Twayne Publishers, Inc., 42 Broadway, New York 4, 1950.

This is the author's sixth book of sonnets. While he has written other books of poetry, the sonnet has taken such deep root in his mind that he now can write one without stopping to count the lines. This book acquires the name illegimate, because the sonnets do not resemble either the 8-6 original form of Petrarch nor the 4-4-4-2 model of Shakespeare. The author experiments with the sonnet, changing his models continually, as if it were plastic. In this volume, 128 sonnets are directed to various human experiences that are off the beaten path. The sonnet about a coolie who never had a shirt is a favorite:

His wishes took on a very concrete form:
He said he wanted a U. S. Army shirt.

Some men might want a ranch house or a farm,
Some a gold mine full of rich paydirt,
But all he wanted was a U. S. Army shirt.

Who was he? He was a coolie I once knew
In China. Once he helped me pull my jeep
Out of a mudhole on a ruined road
Somewhere on the outskirts of Nanking.

It took us hours to dig and pull it out,
But finally we did. I took off my shirt
And gave it to him; he was happier
Than Louis Sixteenth ever was as king.

He told me he had never had a shirt.

Dr. Moore is a psychiatrist, a long distance swimmer, an authority on marine shells, and the father of a large family. His scientific reports in various medical journals, including The Journal, attest his broad interest in medicine. He has published studies on brain tumors, alcoholism, epilepsy, syphilis, subdural hemorrhage in psychotic patients, and other subjects. He served in the South Pacific Islands and in China during World War II and was awarded the Bronze Star and other medals.

**Das autogene Training (konzentrative Selbstentspannung): Versuch
klinisch-praktischen Darstellung.** Von Prof. J. H. Schultz. Sixth e
Cloth. 27 marks. Pp. 325, with 17 illustrations. Georg Thieme, D
shaldenstrasse 47, (14a) Stuttgart O; Agents for U. S. A.: Grune &
ton, Inc., 381 Fourth Ave., New York 16, 1950.

"Autogenic training" seems to be the author's phrase fo
untary, progressive relaxation, and the purpose of the book
describe the technics and difficulties of the process, as w
to indicate its relation to suggestion, hypnotism, yoga,
nastics and pedagogy. In the course of several editions, the
has achieved a scholarly completeness and polish that will
press pleasantly those who are in sympathy with the aut
objectives. To the unsympathetic it must seem overdone, b
ning with the pictures showing the reader how to sit and re
(pages 15, 17) and reaching a climax in the case history
art critic who found that people paid more attention to
after he had developed the habit of relaxing carefully in
of each picture before announcing his verdict. Despite th
of precision, the book is not truly critical, and the frequ
occurring expression *"Kontrollversuch"* unfortunately doe
mean "controlled experiment." The style is exclamatory
affected, and on page 94, for example, the author concate
participial phrases in a way that has been ridiculed justly
the days of Mark Twain. The book seems to be dedicated
proposition that the tensions of the body are to be relieved
satisfying its needs but by lying down somewhere and rel
It will impress some readers, in fact, as a *reductio ad absu*
corroborating the editorial opinion of the *Saturday Ev*
Post that the real need is for "a book of counterpropa
under the title, Start Worrying or Stop Living!"

The Education of Nursing Technicians. By Mildred L. Montag,
R.N., Assistant Professor of Nursing Education, Teachers College, C
bia University, New York. Foreword by R. Louise McManus,
R.N., Professor of Nursing Education and Director, Division of N
Education, Teachers College, Columbia University, New York.
$2.50. Pp. 146. G. P. Putnam's Sons, 210 Madison Ave., New Yor
1951.

This new plan of nursing education is somewhat unique
unusual. The author is well equipped to write on nursing
cation. The book probably will be classed as a general refer
work. Inclined to be repetitious, it is well documented, and
are extensive bibliographies.

The present pattern of nursing education is carefully asse
The criticisms are much the same as those presented by c
who have made a study of nursing education in the U
States.

Three types of nursing personnel are recommended-
trained practical nurse, the professional (collegiate) nurse,
the nurse technician. This is but a slight deviation from the
ent group of nurses. The nursing technician, as outlined in
book, actually takes the place of the present hospital dipl
nurse and will be trained in a junior college. This sugges
will meet with a great deal of opposition. A proposed two
course will meet with the approval of many. The book proba
will not influence nursing education to any great extent.

The Practice of Sanitation. By Edward S. Hopkins, *Principal Asso*
Engineer, Bureau Water Supply, Baltimore, Maryland, and Franci
Elder, Colonel, Medical Service Corps (Sanitary Engineering Sec
USAR. Cloth. $7.50. Pp. 423, with 110 illustrations. Williams & W
Company, Mount Royal and Guilford Aves., Baltimore 2, 1951.

Interesting and instructive information is presented in
volume, which gives detailed attention to the many aspect
environmental sanitation without being too technical for
enjoyment or edification of the average nonspecialist reader
the foreword points out, this is an appropriate time to asse
and survey the many advances that have occurred within
last half century.

Sixteen chapters comprise the volume. After consideratio
the fundamental concepts of sanitation, the principles of
fection and the sanitary survey, the authors give detailed a
tion to food sanitation, milk, water supplies, sewage disp
control of stream pollution, refuse disposal, ventilation, s
ming pools and insect and rodent control. All the newer

in these various areas are described and interpreted, and is a special chapter on administration procedures. Urgent ems such as atmospheric pollution by smoke, dust and pol- re considered in a chapter on environmental sanitation, treats also of housing, slum clearance, industrial sanita- air transporation, camps and motor courts.

ny chapters close with a brief summary of the data pre- d, and in most instances there are extensive bibliographies each chapter. It can be stated that the aim of the authors ovide a guide for the training of physicians, nurses, sani- s and students in sanitary engineering has been attained. In ion, the volume should be of value to school administrators eachers, health departments and all leaders in civic activ- Author and subject indexes are provided.

nonary **Ventilation and Its Physiological Regulation.** By John S. M.D., Ph.D., Professor of Physiology, Northwestern University al School, Chicago. Publication number 63, American Lecture Series, raph in American Lectures in Physiology, edited by Robert F. Pitts, Ph.D., Professor of Physiology and Biophysics, Cornell University al College, New York. Cloth. $2. Pp. 82, with 14 illustrations. s C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; ell Scientific Publications, Ltd., 49 Broad St., Oxford, England; yerson Press, 299 Queen St., W., Toronto 2B, 1950.

this monograph the author explains and defends his quanti- theory as to the identity and relative importance of the bles that determine the frequency and depth of breathing an. The theory is stated in general terms on pages 11 and The three important variables are the tension of carbon ide, the tension of oxygen and the negative logarithm of the ogen ion concentration in the arterial blood. By assigning ppropriate weight to each of these three figures and then ng, one can obtain the figure for pulmonary ventilation iratory minute-volume). A closing section gives an illumi- g discussion of the concept of sensitivity. This concept, as ied to the respiratory center, has often been invoked in pre- s attempts to make theories of respiration come out right; mpts the physiologist much as "Kelly's constant" is said to pt the engineer. The author neither accepts nor rejects this cept.

y way of negative criticism it must be said that the notation in the equations is of a sort that irritates mathematicians can drive a medical student to despair. Too many letters used not as factors in a product but in abbreviations like The symbol "p" sometimes means "the negative logarithm the concentration expressed in equivalents per liter" as in ," but sometimes means "tension of a gas measured in milli- ters of mercury" as in "pCO_2." There is also little justification the use of subscripts on subscripts in situations as simple as on page 36. A glance at the bibliography (pages 80 to revealed eight errors in less than that many minutes.

This book can be recommended to physiologists and pharma- ogists as a succinct discussion of a problem with which they ve been occupied for a long time.

heck: **Community Health Educator's Compendium of Knowledge.** By lr E. Turner, Ed.M., D.Sc., Dr.P.H., Assistant to President, National ndation for Infantile Paralysis, Arlington, Mass. Cloth. $3. Pp. 266, illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. s 3, 1951.

The significance of the title is found in the organization of the ok which is a check list. The basic principles of health educa- n are discussed in check list form so that circumstances in a en community can be evaluated. In like manner established thods of working with people can be checked. The mediums group communication such as writing, speech, television, lio, newspapers, pamphlets, books, visual aids and letters questionnaires are enumerated also according to the check principle. One extensive chapter shows how a given commu- y carried through an educational program combined with ac- n for the eradication of poison oak. This book should be of erest to physicians engaged in public health or health educa- n projects or to the members of county medical society com- ittees who may have occasion to evaluate health education pro- ams current in their communities.

Parasitic Infections in Man. Edited by Harry Most. Symposium held at New York Academy of Medicine, March 15 and 16, 1949. Symposia of Section on Microbiology, New York Academy of Medicine, no. 4. Cloth. $4.50. Pp. 229, with illustrations. Columbia University Press, 2960 Broadway, New York 27, 1951.

The editor of this book is chairman of the section on microbiology. The symposium consists of a series of papers by 14 authorities, which are separated into chapters. These cover significant developments in the knowledge of the common parasitic diseases in man: malaria, blood flagellates, amebiasis, intestinal helminths and schistosomiasis. The introductory lecture emphasizes the economic and political aspects of human parasitism. Immunologic diagnosis and immunity to parasitic infections are separately discussed. Also of interest is the report of significant findings in the life cycle of malarial parasites. Evaluation of amebicides and the status of antimalarial drugs, which are presented, will be of special interest to physicians in both epidemic and endemic areas of these infections. Clinicians working in parasitology or in tropical medicine will find this book of value for a quick review of current developments and the direction of future investigations of the subject. The usefulness of the publication is increased by references at the end of each chapter. No general index is provided. The binding, paper and format are pleasing and designed for convenience.

Klinische Physiologie und Pathologie. Von Prof. Dr. Ferdinand Hoff, Vorstand der medizinischen Klinik der Städtischen Krankenanstalten Aachen. Cloth. 39 marks. Pp. 782, with 124 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A.: Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

This is a book of interpretations and attitudes, as distinguished from data and proofs, regarding the diseases of the human body. Beginning with two chapters on the general concept of disease and on the coordination of circulation, respiration and metabolism, the author takes up in turn the various systems of the body and explains how they are disturbed in disease. It is assumed that the reader starts with a thorough knowledge of physiology and pathology, so that it is sufficient to allude to things without defining them (e. g., the Rumpel-Leede test on page 279) or to define them (e. g., thrombasthenia) without proving that they exist. The style is self conscious and lofty, and there is much emphasis on the idea that all parts of the body are involved in every disturbance of its equilibrium. However, there is genuine scholarship behind this work; there is a good bibliography, and the illustrations are excellent.

Anatomy of the Nervous System. By Olof Larsell, M.A., Ph.D., Sc.D., Professor of Anatomy, University of Oregon Medical School, Portland. Introduction by A. T. Rasmussen, Ph.D. Second edition. Cloth. $9. Pp. 520, with 382 illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1951.

This introductory textbook of neuroanatomy has undergone considerable reorganization and revision. The opening chapters present in some detail the gross anatomy, embryology and histology of the central nervous system and serve as a background for the subsequent description of the connections and relation of the functional pathways of the brain and spinal cord. The final chapter deals with the blood supply of the brain and spinal cord and the innervation of the meninges. The book contains numerous clearly labeled illustrations, and there is a selected list of references at the end of each chapter. The book presents a broad survey of the field of neurology and should be of value to students of biology, including medical students.

The Normal Encephalogram. By Leo M. Davidoff, M.D., Director of Neurological Surgery, Beth Israel Hospital, New York and Cornelius G. Dyke, M.D. Third edition by Leo M. Davidoff. Cloth. $6. Pp. 240, with 190 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1951.

This book is and has been the standard work on pneumoencephalography since it first appeared. It is concisely and clearly written and is a thorough presentation of the subject. The illustrations are well chosen and clearly reproduced. There is a useful index. The sizable bibliography has not been brou up-to-date. It contains few references from the past decade

Virus and Rickettsial Diseases. By S. P. Bedson, M.D., F.R.C.P., F.R.S., Professor of Bacteriology, London Hospital, London, A. W. Downie, D.Sc., M.D., Professor of Bacteriology, University of Liverpool, Liverpool, F. O. MacCallum, M.Sc., M.D., Director, Virus Laboratory, Central Public Health Laboratory, and C. H. Stuart-Harris, M.D., F.R.C.P., Professor of Medicine, University of Sheffield, Sheffield. Cloth. $4.50. Pp. 383, with 33 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

Four of the 24 chapters of this manual deal with the general aspects of the viruses, such as their size, microscopy, culture, effect on cells, chemical composition, probable nature, immunology and natural history, as well as the epidemiology and therapy of viral diseases. The subsequent pages deal with viruses commonly infecting man. Each chapter consists of a brief introduction; taxonomic discussion, followed by the description of the biological and physical properties, viability and action of the virus; a presentation of the pathology, clinical features, diagnosis, epidemiology, treatment and control of the respective disease, and a list of references. The last two chapters deal with animal viruses affecting man and with bacteriophages. The appendix contains a tabulation of the methods of the laboratory diagnosis of viral diseases. Finally, an excellent index is added.

The greatest virtue of this book is that it presents much information in a brief, concise way. In spite of its brevity, the authors were able to find more space for problems which require detailed discussion, as, for example, the description of the difference between viral hepatitis and homologous serum jaundice. The information contained in this manual is up-to-date. One certainly appreciates the very careful presentation of such controversial topics like infectious mononucleosis and viral diarrhea. The style of the book is excellent. It has been carefully edited and printed.

The Burden of Diseases in the United States. By Alfred E. Cohn and Claire Lingg. Cloth. $10. Pp. 129, with 38 illustrations and 5 boxed charts. Oxford University Press, 114 Fifth Ave., New York 11, 1950.

This is an extensive analysis of mortality statistics and morbidity surveys in the United States. A large color chart also shows mortality rates by major causes of death in 42 foreign countries. The authors state their purpose as "scrutinizing critically the vast amount of statistical information that now lies frozen and uninterpreted in the articles and publications of census bureaus." The discussion is scholarly and stimulating. On the whole, the objective of the book has been achieved, and the volume will serve as an excellent reference for those interested in the existing data regarding mortality and morbidity from specific diseases. Specialists in each field probably will question some of the points made regarding the disease group of their special interests. However, the authors always manage to present some fresh viewpoint. An example is found on page 9: "We tend to advertise and to back specified diseases as if they were race horses, each special group of physicians and their lay supporters betting on his own particular horse. . . . . How special pleaders are to be managed is a question that needs most seriously to be canvassed. . . . . It is not too much to expect, we hope, that voluntary health agencies will co-operate, in candor, to serve the public rather than to serve their own vested interest." The book can be recommended particularly to those interested in public health and vital statistics.

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The authoritative standing of this textbook on clinical parasitology is widely recognized. This edition lives up to its predecessors and includes advances in knowledge of the subject that have been made since the previous edition. Most of the chapters have been revised and new ones added to improve the text and to include new information. A question might be raised regarding the practicality of retaining the separate chapter on nonpathogenic amebas, which are considered significant only in the differential identification of Endameba histolytica. The authors are indebted to Dr. Albert Miller for a new chapter on the control of medically important arthropods, which includes valuable information on the use of insecticidal chemicals. There are some new illustrations, and several of the older ones have been revised.

The book retains the scheme of zoologic classification and the classical textbook style in presenting the information on specific parasitic diseases. It retains also the valuable technical section on the procedures for collection of the specimens required and laboratory methods for identification of human parasites and arthropods. The separate section of references to the literature is essential for students of the subject. The book provides both an author and a subject index. On page 1028, the latter lists trachoma as being on page 693, but no mention of that viral disease is found or should be found in a book on parasitology. This new edition is otherwise comparatively free from errors and will be welcomed alike by physicians, students and laboratory workers in parasitology.

Toxæmias of Pregnancy: Human and Veterinary. Editors: John Hammond, M.A., D.Sc., F.R.S., F. J. Browne, M.D., D.Sc., F.R.C.S., and G. E. W. Wolstenholme, OB.E., M.B. Ciba Foundation symposium. Cloth. $4.50. Pp. 280, with 93 illustrations. The Blakiston Company (Division of Doubleday & Company, Inc), 1012 Walnut St., Philadelphia 5, 1950.

This monograph presents material read before a meeting of European and North American authorities. There are short presentations on the physiology of pregnancy, the pathologic lesions and changes occurring during various toxemias, and certain theories of etiology.

One of the most interesting etiological theories is the theory of Schneider. He postulates that certain thromboembolic phenomena and pathologic changes found in experimental animals after injection of thromboplastin resemble changes occurring in certain complications of pregnancy, including toxemia. Schneider stresses several possible portals of entry for thromboplastin into the maternal circulation from the conceptus. He suggests that the frequently seen, isolated, retroplacental hemorrhages may play a major role in the mobilization of thromboplastin into the maternal circulation in human toxemia.

Despite the variability inherent in a presentation by many authors, this book is a valuable monograph replete with excellent sources of bibliography.

Natural Childbirth: A Manual for Expectant Parents. By Frederick W. Goodrich, Jr. Cloth. $2.95. Pp. 176, with illustrations. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, 1950.

Grantly Dick Read's theories form much of the background for this presentation. The advantages and disadvantages of "rooming-in" are also developed. "Natural childbirth" is a misnomer since it implies no interference with the natural course of labor. Actually, the author suggests pain relief and episiotomy in the conduct of labor during "natural childbirth." As an exposition on the proper course of prenatal care and preparation for childbirth for the laity, this is a well-developed, logical book couched in simple, understandable language. Certainly, the psychosomatic advantages of proper education and preparation of the mother for childbirth should not be overlooked by the profession. A relaxed, confident, understanding, cooperative patient makes the obstetrician's task easier and will tend to further reduce complicating factors of childbirth.

Official Methods of Analysis of the Association of Official Agricultural Chemists. Editorial Board: Henry A. Lepper, Chairman. Committee on Editing Methods of Analysis: H. J. Fisher (Chairman), and others. Seventh edition. Cloth. $10. Pp. 910, with 73 illustrations. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C., 1950.

This is the latest edition of the methods recommended for "official" analyses of some drugs, most foods, common insecticides, some cosmetics and the chief vitamins. The methods were developed through an extensive program of cooperative testing and are practically foolproof. The chemists belonging to the association, i. e., those who developed the assay procedures, are those employed by city, state and federal departments of agriculture and agencies concerned with the enforcement of laws relating to foods, drugs, fertilizers, feeds, insecticides and fungicides. Eighty pages of tables in the back of the work make it self contained. There is an excellent index.

QUERIES AND MINOR NOTES

TREATMENT OF MYASTHENIA GRAVIS

To the Editor:—*A young patient with myasthenia gravis requires three injections of neostigmine daily. She does not respond to medication by mouth and cannot eat without having 1.0 cc. of 1:1,000 neostigmine 20 minutes to a half-hour before. The case has been properly worked up at one of the major centers and is apparently one of pure myasthenia gravis. Is there any further therapy? Is there any center or school performing research on this disease with whom I might communicate?* *M.D., Harrison, N. Y.*

Answer.—Almost all patients with myasthenia gravis can be adequately maintained on oral medication with neostigmine bromide, provided the drug is given at appropriate intervals of time throughout the day and night. Injections of neostigmine methylsulfate in rare instances may be necessary to supplement the oral medication. They are usually used prior to the main meal of the day, if dysphagia is one of the principal symptoms, to augment the ingestion of neostigmine. In one series of over 300 patients with myasthenia, no case has been found in which oral medication was not useful and, indeed, the primary means of giving neostigmine. It is possible that a patient would not respond to medication by mouth if there were some fundamental difficulty in absorption, but an incidence has not been reported in the literature or met with clinically. The difficulty expressed in the query would seem to be due to a failure to adjust the patient to the proper dose at the appropriate interval of time. Ordinarily the effect of neostigmine when given by mouth wears off in about two hours, and further medication is needed. Schedules on a two hour basis are usually set up and changed from time to time until adequate maintenance is achieved. This requires a good deal of persistence on the part of both the patient and the physician and sometimes can be done only under hospital circumstances.

There are relatively few medical centers that have specialized in the investigation of myasthenia gravis. Work has been done, however, at the Johns Hopkins Hospital, the Mayo Clinic and the Neurological Institute in Montreal; the largest clinic has been established at the Massachusetts General Hospital in Boston, where research has been carried on since 1935 and more than 300 patients investigated.

ORTHOKINETICS

To the Editor:—*I would like information on orthokinetics which is being popularized by one Dr. Julius Fuchs in New York City. I have been unable to find anything in the literature regarding this new method of therapy in the treatment of hypertrophic osteoarthritis. I understand that it is a means of changing muscle function from one set of muscles to another in order to rest the affected joint.*

M.D., New York.

Answer.—More evidence than has been presented would be necessary before the procedure of orthokinetics could be considered seriously. The mechanisms described by the author are not presented clearly, and their value is debatable, to say the least. The mechanics as described by the author in his vague article published in English in 1946 cannot be accepted. It seems evident that it would not be possible in the majority of instances to obtain the mechanical substitutions which he described. Even if change of muscle function were possible by the method, this procedure could not be expected to be of any great value in the management of hypertrophic arthritis as it still would not rest the joint. It is known that surgical tendon transferral, whereby muscle function can be changed, usually has no appreciable effect on a hypertrophic joint. The procedure of orthokinetics requires much more study before it can be given any acceptance.

COLOR-BLIND HUNTERS

To the Editor:—*Should hunting licenses be issued to color-blind persons? If not, what color test would be the best for general use? If licenses are issued indiscriminately, what colors or combination of colors should the hunter wear so that he would not be mistaken for game?*

M. M. Medvene, M.D., Reading, Pa.

Answer.—To refuse hunting licenses to color-blind persons would be an undeserved discrimination. There is no color or combination of colors that will do more than call attention by contrast when visibility and visual acuity permit. Color-blind persons distinguish difference in contrast and brightness that suffices for their lack of ability to name color and adequately answers their need for general living conditions.

The custom of using red as identification by a hunter has become well established in the minds of the people, as is the use of white canes by blind persons. The same identification could be established about any color that gives equal contrast with the usual surroundings. No color worn by a hunter will be more readily discerned or more quickly interpreted by the vast majority of hunters than the accustomed red. After all, the flag of identification must be set up for all hunters, irrespective of their color vision. The color-blind among hunters are no greater in proportion than in civil life. Their record of safety in traffic is no worse than the record of those who are not color blind. Factors other than inability to recognize the red cap of a hunter and the white tail of a deer are more responsible for unfortunate hunting accidents.

PREGNANCY TESTS AND DIURESIS IN PREGNANCY

To the Editor:—*What is the specificity of the neostigmine (prostigmine®) test in early pregnancy? What is the specificity of the test employing cyclogesterin® (estrogenic substances and progesterone) for the same purposes? Have mercurial diuretics been used to control edema and/or excessive weight gain in pregnancy when conventional measures fail?*

M.D., Pennsylvania.

Answer.—None of the various pregnancy tests that have been described has the degree of accuracy exhibited by the endocrine tests. The Aschheim-Zondek, the Friedman rabbit test or the several frog tests are accurate in 95 to 98 per cent of pregnant women checked within two weeks after the missed menstrual period. Results become positive in most instances within three weeks after fertilization or a week after the missed menstrual period. They all depend on the high concentration of urinary gonadotropin early in pregnancy.

Mercurial diuretics are not popular for promotion of diuresis in pregnancy. They may be used in pregnant patients who have good renal function, and, when administered in liberal amounts, they are effective. Disturbed water balance and the retention of fluids can be better managed by severe chloride restriction and administration of hypertonic dextrose solutions intravenously. Usually, 20 per cent concentrations are most effective, but small amounts of 30 per cent solution may be used in women who have cardiac failure or who develop oliguria.

DENTAL CARIES AND A MILK-FREE DIET

To the Editor:—*I would appreciate your opinion on the effect on a teen-ager's teeth of a completely milk-free diet.*

M.D., Pennsylvania.

Answer.—A milk-free diet should have no ill effect on dental caries, provided the diet is normal otherwise. The important dietary factor in relation to caries is fermentable sugar, which is known to promote dental decay. Experience in Italy (Schour, Isaac and Massler: Dental Caries Experience in Postwar Italy (1945): I. Prevalence in Various Age Groups, *J. A. D. A.* 35:1 [July] 1947) showed that the milk-free diet does not increase the caries attack rate.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

Virus and Rickettsial Diseases. By S. P. Bedson, M.D., F.R.C.P., F.R.S., Professor of Bacteriology, London Hospital, London, A. W. Downie, D.Sc., M.D., Professor of Bacteriology, University of Liverpool, Liverpool, F. O. MacCallum, M.Sc., M.D., Director, Virus Laboratory, Central Public Health Laboratory, and C. H. Stuart-Harris, M.D., F.R.C.P., Professor of Medicine, University of Sheffield, Sheffield. Cloth. $4.50. Pp. 383, with 33 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

Four of the 24 chapters of this manual deal with the general aspects of the viruses, such as their size, microscopy, culture, effect on cells, chemical composition, probable nature, immunology and natural history, as well as the epidemiology and therapy of viral diseases. The subsequent pages deal with viruses commonly infecting man. Each chapter consists of a brief introduction; taxonomic discussion, followed by the description of the biological and physical properties, viability and action of the virus; a presentation of the pathology, clinical features, diagnosis, epidemiology, treatment and control of the respective disease, and a list of references. The last two chapters deal with animal viruses affecting man and with bacteriophages. The appendix contains a tabulation of the methods of the laboratory diagnosis of viral diseases. Finally, an excellent index is added.

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There are relatively few medical centers that have specialized in the investigation of myasthenia gravis. Work has been done, however, at the Johns Hopkins Hospital, the Mayo Clinic and the Neurological Institute in Montreal; the largest clinic has been established at the Massachusetts General Hospital in Boston, where research has been carried on since 1935 and more than 300 patients investigated.

ORTHOKINETICS

To the Editor:—*I would like information on orthokinetics which is being popularized by one Dr. Julius Fuchs in New York City. I have been unable to find anything in the literature regarding this new method of therapy in the treatment of hypertrophic osteoarthritis. I understand that it is a means of changing muscle function from one set of muscles to another in order to rest the affected joint.*

M.D., New York.

Answer.—More evidence than has been presented would be necessary before the procedure of orthokinetics could be considered seriously. The mechanisms described by the author are not presented clearly, and their value is debatable, to say the least. The mechanics as described by the author in his vague article published in English in 1946 cannot be accepted. It seems evident that it would not be possible in the majority of instances to obtain the mechanical substitutions which he described. Even if change of muscle function were possible by the method, this procedure could not be expected to be of any great value in the management of hypertrophic arthritis as it still would not rest the joint. It is known that surgical tendon transferral, whereby muscle function can be changed, usually has no appreciable effect on a hypertrophic joint. The procedure of orthokinetics requires much more study before it can be given any acceptance.

COLOR-BLIND HUNTERS

To the Editor:—*Should hunting licenses be issued to color-blind persons? If not, what color test would be the best for general use? If licenses are issued indiscriminately, what colors or combination of colors should the hunter wear so that he would not be mistaken for game?*

M. M. Medvene, M.D., Reading, Pa.

Answer.—To refuse hunting licenses to color-blind persons would be an undeserved discrimination. There is no color or combination of colors that will do more than call attention by contrast when visibility and visual acuity permit. Color-blind persons distinguish difference in contrast and brightness that suffices for their lack of ability to name color and adequately answers their need for general living conditions.

The custom of using red as identification by a hunter has become well established in the minds of the people, as is the use of white canes by blind persons. The same identification could be established about any color that gives equal contrast with the usual surroundings. No color worn by a hunter will be more readily discerned or more quickly interpreted by the vast majority of hunters than the accustomed red. After all, the flag of identification must be set up for all hunters, irrespective of their color vision. The color-blind among hunters are no greater in proportion than in civil life. Their record of safety in traffic is no worse than the record of those who are not color blind. Factors other than inability to recognize the red cap of a hunter and the white tail of a deer are more responsible for unfortunate hunting accidents.

PREGNANCY TESTS AND DIURESIS IN PREGNANCY

To the Editor:—*What is the specificity of the neostigmine (prostigmine®) test in early pregnancy? What is the specificity of the test employing cyclogesterin® (estrogenic substances and progesterone) for the same purposes? Have mercurial diuretics been used to control edema and/or excessive weight gain in pregnancy when conventional measures fail?*

M.D., Pennsylvania.

Answer.—None of the various pregnancy tests that have been described has the degree of accuracy exhibited by the endocrine tests. The Aschheim-Zondek, the Friedman rabbit test or the several frog tests are accurate in 95 to 98 per cent of pregnant women checked within two weeks after the missed menstrual period. Results become positive in most instances within three weeks after fertilization or a week after the missed menstrual period. They all depend on the high concentration of urinary gonadotropin early in pregnancy.

Mercurial diuretics are not popular for promotion of diuresis in pregnancy. They may be used in pregnant patients who have good renal function, and, when administered in liberal amounts, they are effective. Disturbed water balance and the retention of fluids can be better managed by severe chloride restriction and administration of hypertonic dextrose solutions intravenously. Usually, 20 per cent concentrations are most effective, but small amounts of 30 per cent solution may be used in women who have cardiac failure or who develop oliguria.

DENTAL CARIES AND A MILK-FREE DIET

To the Editor:—*I would appreciate your opinion on the effect on a teen-ager's teeth of a completely milk-free diet.*

M.D., Pennsylvania.

Answer.—A milk-free diet should have no ill effect on dental caries, provided the diet is normal otherwise. The important dietary factor in relation to caries is fermentable sugar, which is known to promote dental decay. Experience in Italy (Schour, Isaac and Massler: Dental Caries Experience in Postwar Italy (1945): I. Prevalence in Various Age Groups, *J. A. D. A.* 35:1 [July] 1947) showed that the milk-free diet does not increase the caries attack rate.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

INOPERABLE METASTATIC CANCER OF BREAST

To the Editor:—*Kindly supply data on the use of snake venom as well as mustard gas in the treatment of carcinoma. A woman in the early forties noted a small mass in one breast, and seven days later she was convalescing following its removal. Microscopic study disclosed its malignant character and now, nine months later, there are metastases, involving the bones in the lower limbs and the chest. Please cite pertinent bibliography and sources of supply for any recommended preparations of these two agents.*

L. K. Poyntz, M.D., Shiprock, N. Mex.

Answer.—Snake venom has largely disappeared from clinical use. There is no substantial evidence that it has any useful effect on cancer, although contradictory reports are contained in the literature and cobra venom has been used for the relief of pain with questionable results. A recent reference to the use of cobra venom in cancer may be found in an article by Hodes and Thorner (*Am. J. Roentgenol.* **45**:866, 1941).

Nitrogen mustard has been most effective in the treatment of the lymphomas and leukemias, but, occasionally, patients with breast cancer have shown transient regressions of the disease. These responses in breast cancer are unpredictable, and nitrogen mustard is not generally recommended (Karnofsky, D. A.: "Advances in Internal Medicine," New York, Interscience Publishers, 1950, vol. 4).

The available methods for treating inoperable metastatic carcinoma of the breast in premenopausal patients are castration, testosterone therapy and radiation therapy to selected areas. Castration is probably the treatment of choice. If this is not feasible, testosterone may be used; 100 mg. three times a week intramuscularly has been found in a large series of patients to produce objective improvement in about one-third and symptomatic improvement and relief of pain in about two thirds of the cases. The average period of improvement is about six months (Adair, F. E., and others: Estrogens and Androgens in Advanced Mammary Cancer, *J. A. M. A.* **140**:1193 [Aug. 13] 1949).

ASCARIASIS

To the Editor:—*I would appreciate information on the merits and disadvantages of chenopodium oil in the treatment of Ascaris infections in infants.*

William L. Bundy, M.D., North Wilkesboro, N. C.

Answer.—Chenopodium oil is the most potent anthelmintic agent for treatment of ascariasis. One administration of the oil usually removes 90 to 95 per cent of the parasites. It is bitter, has an unpleasant odor and is usually administered in combination with castor oil. The latter lessens absorption and toxicity but adds to the unpalatability of the mixture. Children, malnourished persons and the aged are susceptible to the toxic effects of the agent. The drug is cumulative, and its use should not be repeated for a week to 10 days after the first dose. In children the dose is 0.05 cc. per year of age, usually divided into two or three doses; it may be administered as drops of the mixture with castor oil. In infants the oil mixture is somewhat difficult to administer and may be accidentally inhaled into the lungs if the infant is resisting medication.

DIAPER RASH

To the Editor:—*Is there any internal treatment of ammonia dermatitis (diaper rash)?* *M.D., Pennsylvania.*

Answer.—Intertrigo, or diaper rash, is a red dermatitis due to irritation of the skin by sweat, urine, feces, irritating soaps and other local irritant agents. The ammoniacal diaper rash is not caused by the passage of ammonia in the urine but by the ammonia that is formed in the diaper, wet clothing or bed sheets by bacteria, which liberate it from the voided urine.

A highly concentrated urine may cause a scaldlike irritation of the tender skin of the young infant. In such instance one may increase the fluid intake by (*a*) urging the drinking of water and fruit juices between feedings, (*b*) restricting the foods that may cause acid urine, such as tomato, asparagus, rhubarb, prunes and prune juice, (*c*) the addition of a small amount of sodium citrate, 0.30 to 0.60 Gm. three times daily, to aid in neutralizing a very acid urine.

External aids in the treatment of diaper rash are the boiling and rinsing of diapers and, if necessary, the shirts, night clothes and sheets; this aids in eliminating the ammonia-producing bacteria. If the rash is severe, the diaper should be changed at each feeding or between feedings. Water-proof pants retain moisture and may cause further masceration of the skin; they also reduce the free circulation of air. Double diapering may help to absorb the moisture. A final rinsing of the diapers in a boric acid solution or in solutions containing methylbenzethonium chloride (diaparene chloride® or ammorid®) will act to prevent the occurrence of the ammonia-producing bacteria. Finally, exposure of the irritated skin to air or sunlight and the use of a protective covering, such as zinc oxide ointment or paste (without salicylic acid), may cure the condition and prevent its recurrence.

BILIARY CIRRHOSIS—A DIAGNOSTIC "CATCH-BASKET"

To the Editor:—*Is there any new treatment for biliary cirrhosis of the liver? What do you think of the use of sulfur? Bartholin at one time felt that continued use of proper doses of iodoform would effect a cure. Do you have any late information on its use?*

A. M. Marshall, M.D. Chandler, Okla.

Answer.—The answer to this question depends to a considerable extent on what is meant by biliary cirrhosis, a term which has long been a diagnostic "catch-basket." If the patient is suffering from the so-called cholangeolitic variety of cirrhosis as described by Watson and Hoffbauer, there is probably little that can be done to alter the course of the disease. If he is suffering from a residue of a chronic infectious hepatitis prolonged therapy with aureomycin might be worth a trial (Shaffer, J. M.; Bluemle, L. W. Jr.; Sborov, V. M., and Neefe, J. R.: *Am. J. M. Sc.* **220**:173 [Aug.] 1950). A third variety of liver disease sometimes confused with biliary cirrhosis, viz. chronic atrophy, is not amenable to treatment. It is, of course, assumed that there is no element of mechanical biliary obstruction in this case; certainly, if any doubt exists on this point, exploration of the extrahepatic biliary systems and a liver biopsy should be considered. There is no evidence to indicate that the use of sulfur or iodoform would have any effect on the course of chronic liver disease of any type, and most observers are pessimistic as to the effect of dietetic therapy, lipotropic agents and a high vitamin intake in the varieties of liver disease that would ordinarily be classed under the term biliary cirrhosis.

INFANTILE DIARRHEA

To the Editor:—*I am interested in the treatment of infantile diarrhea. In a lecture on administration of fluids to intubated patients, it was said that giving plain water would result in loss of electrolytes. Would 5 per cent dextrose in water given by mouth in cases of intubation or diarrhea result in a loss of electrolyte? Is rice water a carbohydrate solution? I have seen apple used in various forms. Is this for its pectin content?*

M.D., California.

Answer.—Large quantities of the secretions of the gastrointestinal tract may be withdrawn by Miller-Abbott tubes. The fluid formed within the intestine contains an average of 0.5 to 0.6 per cent sodium chloride. When water is given orally, it i quickly converted to a saline solution in the intestinal tract. I has been pointed out that the loss of electrolytes can be reduce by administration of sodium chloride solution orally instead c water when intestinal juice is being aspirated by a Miller-Abbo tube.

Because of the fluid loss in diarrhea, additional fluids must b given orally or parenterally; otherwise the patient will becom dehydrated. Administration of 5 per cent dextrose solution give orally in diarrhea would not be wise, as the dextrose is readil fermentable and in diarrheal states there is already an increas fermentation. Rice water is a starch, probably not as fermen tive as dextrose, and in all probability the starch passes quickl along in the gastrointestinal tract so that fermentation is not increased. Apple is recommended for its pectin content, and small amounts of scraped raw apple should be offered frequently. Pectin is often combined with kaolin (as in kaopectate®), and the combination is said to absorb toxic intestinal materials and consolidate the stool. Identification of the cause of the diarrhea, whether enteral or parenteral, and treatment with appropriate chemotherapeutic or antibiotic agents are essential considerations in the treatment of infantile diarrheas.

SPONTANEOUS ABORTION

To the Editor:—*A 35 year old white woman with four previous term pregnancies, the youngest child being about 2 years of age, was desirous of an additional pregnancy. All physical findings were normal. Two weeks after the first missed menstrual period, speculum examination showed decided cyanosis of the cervix. In the eighth week the patient began a slight flow of blood and a slight endometrial hyperplasia at the mouth of the cervix. A moderate flow continued until the fourth day, when six hours of severe cramping yielded pieces of placenta. Bleeding gradually decreased. On the tenth day the os was closed and the uterus, in its accustomed anterior position, was felt to be involuting. Are there any indications for curettage? Are there any measures to be taken to insure future conception and maintenance of the pregnancy?*

M.D., Kentucky.

Answer.—When women continue to bleed as the result of retention of some products of conception, a curettage should be performed. However, there is a difference of opinion concerning the treatment when bleeding stops after a spontaneous abortion. Most obstetricians and gynecologists do not perform a curettage if bleeding ceases and the cervix closes after an abortion. There are others who perform a curettement almost routinely in such cases to make certain that all parts of the fetus, placenta and membranes are removed. Not infrequently at the time of such an operation, placental tissue is found. The patient may try to conceive after she has had two menstrual periods. At that time ovulation is restored in most cases. The methods of prevention and treatment of spontaneous abortion are unsatisfactory; hence no specific treatment can be given. Some physicians use estrogens; others employ progesterone; some use a combination of the two; still others prescribe thyroid and so on. However, the results when none of this therapy is used are about the same as when expensive treatment is used.

EYE INJURIES IN WELDERS

To the Editor:—*Please give available information concerning the incidence of blindness related to welding.*

John E. Donovan, M.D., Erie, Pa.

Answer.—Blindness among welders is probably no more frequent than among workers in kindred mechanical trades, but lesser injuries are far more prevalent. Mechanical trauma is the chief cause of total blindness. Ultraviolet radiation leads to flash injuries with painful surface damage, but less than 1 per cent of ultraviolet rays penetrate the interior of the eye. Ultraviolet rays are capable of inducing severe damage, but exposure is largely self limiting. Acute damage eliminates the prospect of sustained exposure. Superficial keratitis could lead to surface opacities to the point of impaired vision, but this severity is rare. On the other hand, infrared rays constituting some 69 per cent of the total radiation, with 31 per cent representing short infrared rays, do enter the deeper eye to the extent of about 12 per cent. The usual protection against the more active ultraviolet rays does not always exclude the infrared rays. As a result, cataracts could arise; statistically, however, such condition is infrequent. This type of a cataract is similar to that occurring among glass workers and chain makers. Retinitis is known to occur, leading on occasion to complete or partial loss of the central vision but may not be permanent. At times a "retinal hole" may be demonstrated, which may not arise for many months after exposure. In general, deep injuries to the eyes of welders from radiation are to be attributed to short infrared rays.

TRICHOTILLOMANIA

To the Editor:—*A mother complains that her child, age 3½ years, "pulls her hair out for the past year and half, mostly when she is sleeping." She had an anesthetic 18 months previously for work done on one of her eyes. She has no apparent endocrine imbalance. I am at a loss for an explanation to the mother. What factors are involved in this case? This child has one brother, four years her senior. The home situation is happy. This child's previous illnesses have been minor. Her dietary habits are normal. She eats almost everything. The mother has put gloves on the child at bedtime, so she is unable to grasp the hair with her fingers; it is beginning to grow in.*

Boyce M. Field, M.D., Pittsburgh.

Answer.—Trichotillomania is the term applied to the condition in which the patient has the habit of pulling out hair from small areas of the scalp or eyebrows; this usually results in a temporary patchy alopecia. This habit of plucking out the hair usually occurs in neuropathic children, other manifestations of which may be disturbed sleep, nightmares, night terrors, biting of finger nails, grimacing and enuresis. Occasionally the hair pulled from the patient's head is swallowed and may form a tumor in the stomach. These gastric tumors, bezoars, are found more frequently in older children than in infants, and in girls, with their long hair. If the habit of swallowing hair persists for a number of years, a hairball of considerable size may form; such a tumor is known as a trichobezoar.

Probably this 3½ year old girl pulls her hair out before she falls asleep, and, as stated, the mother has solved the problem by covering the child's fingers with gloves at bedtime. The hair pulling is probably not associated with such disorders of sleep as talking in the sleep, nightmares, night terrors and sleep walking, nor is it related to rhythmic rolling of the head just before the child falls asleep, known as jactatio capitis nocturna. In all probability the hair pulling in this child is a mannerism that is a manifestation of a neuropathic tendency in her personality.

POSITIVE BLOOD REACTIONS IN A PROSPECTIVE BRIDEGROOM

To the Editor:—*A 30 year old, single, white man, who has never had venereal disease of any kind, recently had a premarital blood test. The Kolmer reaction was positive in a dilution of 1:1 (Venereal Disease Research Laboratory antigen), and the Kline reaction was positive in a dilution of 1:2. Should this man be treated for syphilis?*

Robert E. Jameson, M.D., Davenport, Ia.

Answer.—The above serologic pattern is similar to those usually observed in patients with syphilis. In the absence of any clinical or anamnestic evidence of a syphilitic infection, specific antisyphilitic therapy should be withheld for at least three months. During that period the patient should be subjected to serologic examination with quantitative procedures at monthly intervals in order that any change in the serologic titer may be noted. If, at the end of this time, there has been no appreciable reduction in serologic titer, the patient should be afforded the protection of a course of penicillin therapy. The cardiovascular and central nervous systems, and the spinal fluid should be examined prior to the administration of the penicillin therapy.

NAUSEA AND VOMITING OF PREGNANCY

To the Editor:—*What is your opinion on the use of testosterone for mild symptoms of toxemia of pregnancy, such as nausea, vomiting, concomitant weakness and anemia, of the first trimester. Estrogens were not tolerated at all in this case, and diethylstilbestrol caused marked aggravation. Progesterone was of definite help for eight to 12 hours. Is continuation of androgen therapy permissible, and, if so, how long?*

R. J. Kent, M.D., Savannah, N. Y.

Answer.—In the light of present knowledge the use of testosterone as indicated does not seem necessary. If given before sex determination, it can be dangerous from the point of view of causing hermaphroditism. Estrogens are thought to produce the symptoms mentioned (nausea and vomiting). These symptoms can be reproduced in the menopausal patient by administration of large doses, so their use would be of no value. Anemia normally accompanies pregnancy; it is brought about by dilution of the blood (hydremia) but is usually not manifested early. When anemia is present in very early pregnancy, it is usually a secondary anemia which was present before the woman became pregnant.

Most of the symptoms of early pregnancy can be relieved by the following measures: 1. Some time should be spent by the physician at the first visit to explain the process, relieve the fear and tension developed in many young women by their elders concerning pregnancy and by making the patient understand by sympathetic but understanding firmness that she must follow directions to the letter and not listen to outside (old wives') tales. This is of utmost importance. 2. The patient should have a very high protein, almost fat-free diet with three meals a day, including a good breakfast and a well balanced routine of work, exercise and rest. 3. The addition of ferrous sulfate, calcium and vitamins usually makes the patient feel better. 4. The addition of a small dose of thyroid (30 mg.) if the patient shows no increase in pulse rate. 5. In the areas where the iodine content is low in food and water small doses of strong iodine (Lugol's) solution may be given to enhance thyroid function.

The relief of nausea and vomiting of pregnancy is extremely difficult to evaluate, because many times the patient consults the physician about the time it would normally stop, so anything he gives the patient apparently relieves it.

The above routine accompanied by frequent examination to observe the patient and to relieve her anxiety, makes nausea and vomiting a very minor problem.

FOWLER'S SOLUTION

To THE EDITOR:—*What is the total amount of arsenic in the form of Fowler's solution (potassium arsenite) that may be considered within safe limits for an adult over a period of years. Might the drug produce cancer without producing keratotic changes in the skin?*

H. C. Goldberg, M.D., Plainfield, N. J.

ANSWER.—The development of keratoses from potassium arsenite is in many instances determined by the factor of individual sensitivity. Keratoses may develop after the ingestion of relatively small amounts of potassium arsenite in some persons and only after prolonged usage in others. It is, therefore, impossible to determine a safe dosage in terms of total amount that may be administered safely. Arsenical keratoses frequently develop into squamous cell carcinoma, and some physicians believe that such carcinomas may develop even without the development of keratoses. For that reason potassium arsenite is used much less than in former days and, when used, is prescribed with a nonrefillable prescription. Many physicians prescribe not more than 30 cc. or 60 cc. in total amount, and many others discontinued its use long ago.

RECURRING KIDNEY STONES

To THE EDITOR:—*What is the latest recommendation for prevention of recurring kidney stones?*

P. T. Kilman, M.D., Malakoff, Texas.

ANSWER.—In general there is no specific method applicable to all cases to prevent the recurrence of stones. All foci of infection should be eradicated, such as infection of teeth, tonsils and sinuses. Urinary stasis predisposes to the formation of stones. Therefore, all lesions in the urinary tract associated with stasis due to obstruction call for removal of the obstruction, such as strictures at the ureteropelvic junction, strictures at the ureterovesical junction and obstruction at the neck of the bladder. After operation for stone in the kidney or ureter, the patient should be encouraged to drink a great deal of water. If on chemical examination the stone shows the presence of calcium oxalate, the ingestion of foods rich in oxalates should be avoided (e. g., spinach, asparagus, tomatoes, rhubarb, strawberries, chocolate and cocoa). In the case of pure uric acid stones, [illegible] the excessive use of foods rich in protein.

UNABSORBED BEESWAX

To THE EDITOR:—*A 28 year old woman received an intramuscular injection of penicillin in beeswax about two years ago, and she has complained of pain in the gluteal area since that time. A recent x-ray revealed an unabsorbed mass of beeswax lodged deeply within the muscle tissue. Would you consider the substance carcinogenic, and would you also consider surgical removal of the mass described?* *M.D., New Jersey.*

ANSWER.—Beeswax was used in the suspension of penicillin in oil and beeswax because there was no evidence of its becoming carcinogenic. Paraffin, on the other hand, is known to produce paraffinomas. To date there have been no reported instances of tumor formation following the injection of beeswax. The mass should be removed if the symptoms warrant it. Applications of heat for a period of time might relieve the symptoms and make surgical removal unnecessary.

ASYMMETRIC INFRAGLUTEAL CREASES

To THE EDITOR:—*In Queries and Minor Notes in* THE JOURNAL *of March 10, 1951 (page 773) the statement is made that asymmetry of the gluteal folds is "so common that it should not be listed as a sign of congenital dislocation of the hip." Infragluteal folds are known to be asymmetrical in about 30 per cent of normal, fat infants, while asymmetry of the gluteal folds is rare except in the shortening induced by ascent of the femoral head up the ileum. It is a difficult sign to assess, however, because it is of value only in early infancy when any deviation from a straight line extension makes one or the other gluteal fold appear to be higher than its mate.*

Although the question is concerned with the diagnosis of congenital dislocation of the hip in infancy, during which time the hip is only rarely dislocated, the editorial reply listed included those signs which appear only after dislocation has occurred. In early infancy the condition present, with the rare exceptions recognizable by the signs of dislocation at any age, is a soft, cartilaginous, persistent fetal hip which is splinted by the surrounding muscles. The strong unopposed abductors limit the abduction to 45 degrees or less in the affected leg, from the normal of 60 degrees plus. As dislocation begins, usually at about 6 weeks of age, gluteal asymmetry accompanies the subsequent shortening.

Charles C. Chapple, M.D.,
The Children's Hospital of Philadelphia,
1740 Bainbridge Street,
Philadelphia 46.

VOCAL TRAINING

To THE EDITOR:—*In reference to the query on "Vocal Training" in* THE JOURNAL *of Dec. 2, 1950 (page 1223), I should like to call attention to the fact that much work concerning this question has been done within the medical profession. The editorial in the Dec. 27, 1947 issue of* THE JOURNAL *deals with "Hygiene of the Voice," with mention of the most important American contributions to vocal training. It is true that most of the scientists actively interested in voice problems do not belong to the medical profession; but by no means is this true of all of them. Because there are many possible reasons why a voice remains underdeveloped, an exact diagnosis is necessary. This is one of the reasons that persons making the diagnosis as well as those offering treatment should have a medical background.*

Emil Froeschels, M.D.,
133 East 58th Street, New York 22.

To THE EDITOR:—*I was surprised that no mention of the National Hospital for Speech Disorders was made in* THE JOURNAL *(Dec. 2, 1950) in reply to an inquiry regarding facilities for helping persons with voice problems. This is the only medical-educational institution in the world devoted exclusively to the treatment of speech and voice disorders. The hospital includes a special voice department, in which the services of physicians, psychiatrists, psychologists and voice clinicians are available.*

Ruth M. Clark,
Assistant Administrator,
National Hospital for Speech Disorders,
61 Irving Place, New York 3.